

AIRFIX magazine

NOVEMBER 1969

FOR PLASTIC MODELLERS

2s 6d

MONTHLY



**IN
THIS
ISSUE**

A Sandringham made from a Sunderland
Modelling War Emergency destroyers

with stick to Humbrol!

99 Contact Adhesive
Sticks rubber, metal, glass, wood, immediately on contact

NEW **22** Universal Adhesive
Bonds almost anything

70 Liquid Polystyrene Cement
For clean speedy joints, on rigid polystyrene

10 Expanded Polystyrene Cement
Especially made for expanded polystyrene

10 Plastic Wood
A natural colour filler drying with minimum shrinkage

88 Epoxy Adhesive
The strongest type of adhesive

88 epoxy resin

88 epoxy hardener

33 Liquid Glue
For paper, wood, fabrics, leather, cardboard

77 Polystyrene Cement
For plastic model kits and rigid polystyrene

44 Tissue Paste
Provides a clean, thin, flexible, clear film for tissues

66 Balsa Cement
For balsa wood, cork, card and pottery

66 customising body putty
Filler for polystyrene and wood (not metal)

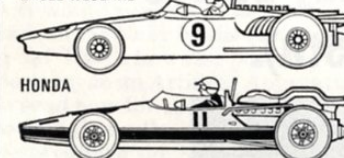
HUMBROL
HUMBROL · HULL · YORKSHIRE

STOP PRESS · STOP PRESS · STOP PRESS · STOP PRESS RACE TRACK NEWS FROM AIRFIX MRRC

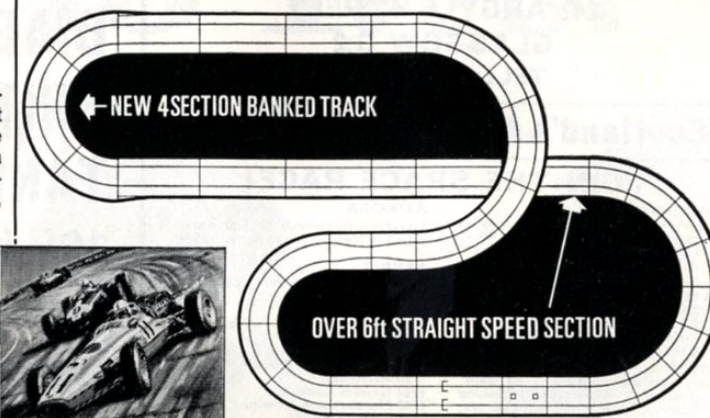
NEW BANKED CIRCUIT MR 300 SET £13.15.0 WITH TWO NEW GP CARS

A new MotorAce set from Airfix—the International MR 300—complete with a banked circuit for high performance cornering. Included in the set are two new 1/32nd scale cars—the Honda and Eagle Weslake. Over 31ft. of double track layout. Banked Section available separately 23/-, High Speed Honda and Eagle Weslake at 28/11d.

EAGLE WESLAKE



HONDA



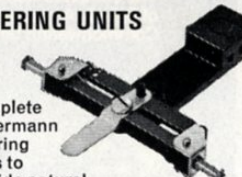
TYRES

A wide selection of tyres for all models. Latest addition the SP 002 for superb road holding and long life.



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CLUBMAN SPECIALS

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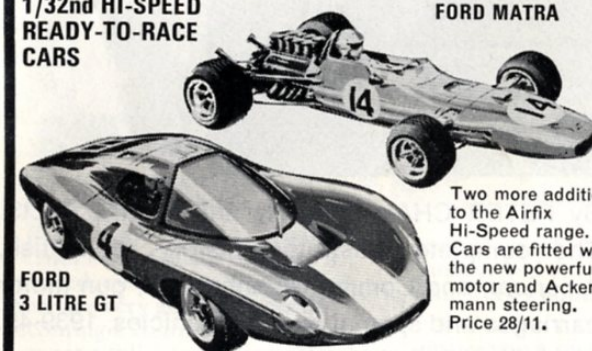


CONTROLLERS

Hand controllers for AIRFIX/M.R.R.C. covering a range of 7½, 10 and 15 ohms.



1/32nd HI-SPEED READY-TO-RACE CARS



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FORD 3 LITRE GT

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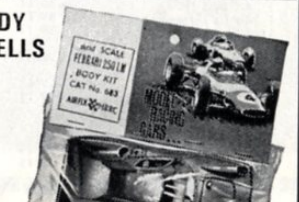
AIRFIX MAGAZINE



A magazine concerned solely with plastic modelling. News, photographs and articles. Only 2/6 monthly.

BODY SHELLS

The Honda, Weslake and Felday Ford have now been added to the existing range of Airfix moulded body shells.



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FORD GT J TYPE



FERRARI 330P



CHAPARRAL 2C

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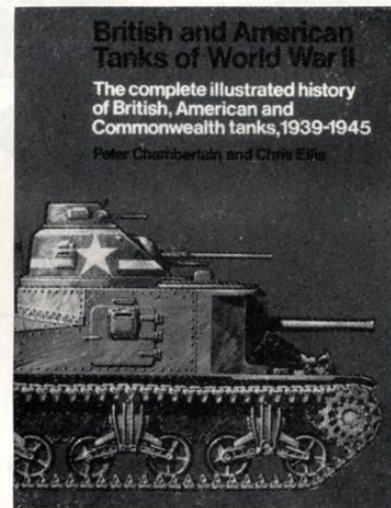
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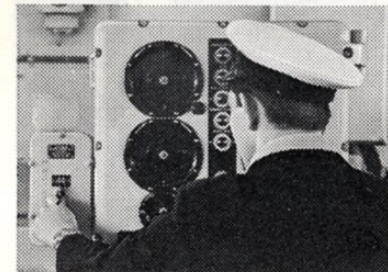
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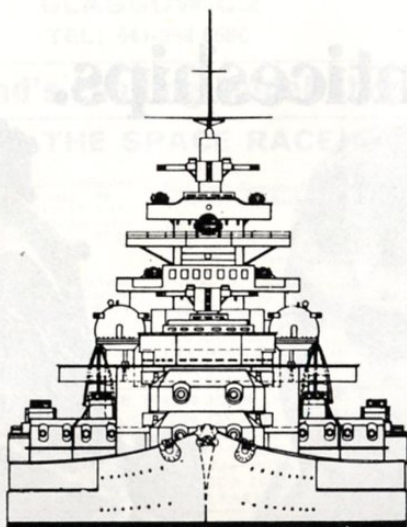
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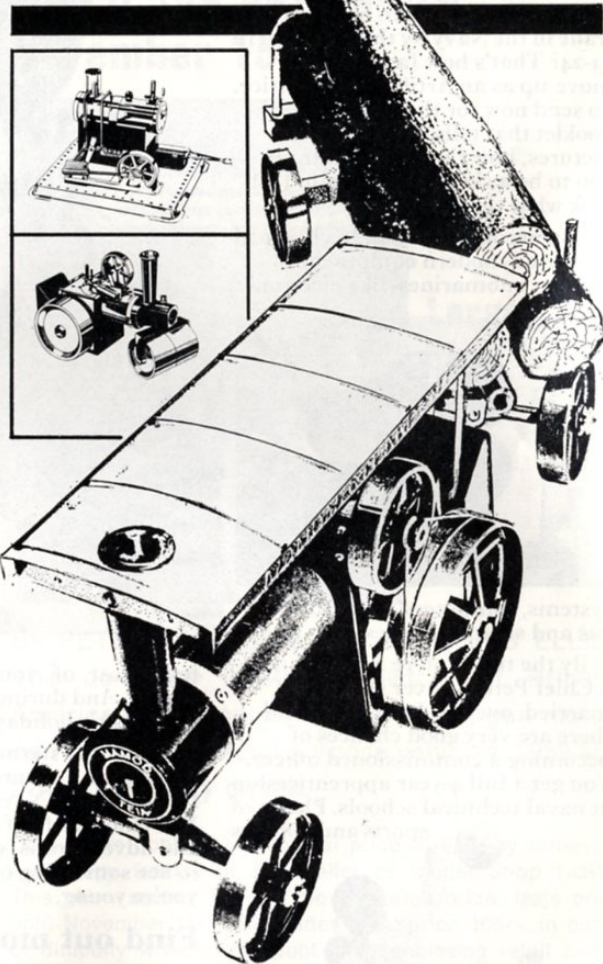
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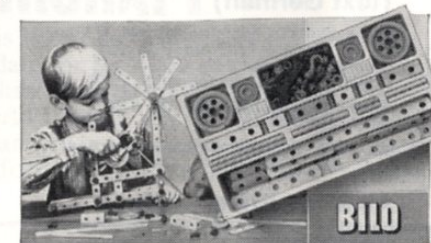
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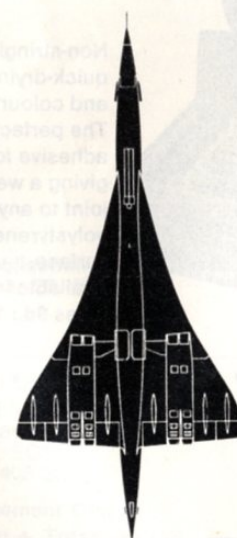
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AIRFIX magazine

AIRFIX magazine FOR PLASTIC MODELLERS

November 1969

Volume 11 No 3

Editor Chris Ellis

Cover Picture

One of the smallest and most attractive aircraft types on the British Register is the Rollason Beta, an all-wood machine designed for fast touring, aerobatics, or racing. It has a wing span of only 20 feet 5 inches, a height of 4 feet 10 inches, and a length of 17 feet. The wings are removable, reducing width to 6 feet 8 inches so that it can be easily transported, and stowed, even, in a domestic garage. This particular machine belongs to the famous Tiger Club whose emblem it displays on the tail. A single-seater, it is made by Rollason Aircraft & Engines Ltd, Redhill.

(Illustration by courtesy of Rollason)

Next publication date:
November 28, 1969

Editorial Offices:

PSL Publications Ltd
9 Ely Place
London, EC1
Tel: 01-405 2297

Advertisement Offices:

Stanbury + Treadway Ltd
9 Ely Place
London, EC1
Tel: 01-405 1721

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Circulation Department:

Surridge Dawson & Company (Productions) Ltd
Publishing Department, 136/142 New Kent Road, London, SE1
Telephone: 01-703 5480

Airfix magazine is published for the proprietors, Airfix Products Ltd, by PSL Publications Limited, on the fourth Friday of each month. Annual subscription rate 36s (USA \$5.50) from Surridge Dawson & Company (Productions) Ltd. Second Class postage paid at New York Post Office, N.Y.

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NEW BOOKS

REVIEWED FOR MODELLERS

Battle over Britain

BATTLE OVER BRITAIN, by Francis K. Mason. German Research by Martin Windrow. Published by McWhirter Twins Ltd, 24 Upper Brook Street, London W1. Price 84s.

THIS is definitely the book for the enthusiast interested in the Battle of Britain period, since its approach is very much from the point of view of someone who has read existing Battle of Britain books and then wants to go into even greater detail. Thus there is a fantastic listing of Fighter Command pilots with a breakdown of sorties, squadrons, 'kills', etc, and a similar (though slightly less comprehensive) listing of Luftwaffe aircrew by unit. In fact, this immense book of over 620 pages does not just cover the Battle of Britain. It starts with the German bomber raids on London in World War I, then deals with background events (eg, development of aircraft, organisation, radar, fighting techniques, etc) in the inter-war period. This takes the first 150 or so pages. Then there is coverage of the 'Phoney War', and finally the Battle itself. This is covered in immense detail in the form of a day to day diary. In short definitely not a book to be read at one sitting, but it can be dipped into at any time if you want to see what was happening in any particular week. There are hundreds of illustrations, many of them very rare and a great many previously unpublished. Included are Luftwaffe reconnaissance maps of key targets which in themselves make a fascinating study. The appendices are most comprehensive and include 16 colour plates with multi-view camouflage drawings of typical aircraft (most of these schemes are 'new', not hackneyed ones previously published), plus some excellent colour plates of RAF and Luftwaffe uniforms and badges.

Production of this book is most lavish and fully matches the outstanding quality of the contents. At 84s it's a true bargain for the money. It would have been good value at twice the price.

Steam history

BRITISH STEAM SINCE 1900, by W. A. Tuplin. Published by David & Charles Ltd, South Devon House, Newton Abbot, Devon. Price 50s.

THE author is well-known for his original and outspoken views on steam locomotive design. He applies his theories to a critical survey of British steam since 1900 and concludes that a Frenchman, M. Chapelon, produced at least one design which beat the lot. In this he is probably right but his wholesale condemnation of some much cherished home produced designs is likely to upset many people who will perhaps think there was another side to the coin. The Southern pacifics are described as having 'a number of unconventional features that were well worth trying. That some of them were not worth keeping became clear to everyone but the chief mechanical engineer...' This is the style.

Outspoken he may be but many of his ideas contain a lot of common sense and his concise descriptions of the various parts of the locomotive and their constructional features are factual and very informative. On the other hand we thought his system of reference numbers for each class of locomotive tedious and of little or no value.

LYR story

THE LANCASHIRE & YORKSHIRE RAILWAY VOLUME I, by John Marshall. Published by David & Charles Ltd, South Devon House, Newton Abbot, Devon. Price 55s.

THE first volume in this three-part history of the L & Y Railway outlines the history of the main constituents which formed the bulk of the railway. As these constituent parts were simultaneously under construction the author has wisely arranged the chapters

geographically to avoid any confusion which might result from chronological presentation. The second volume will be concerned with the various additions and extensions, electrification, shipping, control and administration and a third volume will cover locomotives and rolling stock. It follows therefore that none of these subjects are referred to in detail in Volume I. The 288 pages include 21 pages of illustrations and several maps and gradient profiles.

From Kookaburra

KOOKABURRA BOOKS. Published by Kookaburra Technica Publications, Victoria, Australia, and distributed in UK by BMW Models Ltd, 329 Haydens Road, London SW19. Price 8s 6d each. Titles in text.

RECENT additions to the popular Kookaburra series sent to us for review include a splendid volume on the Albatros, *Albatros Scouts Described*, by Charles Schaedel. With fine scale drawings, lots of rare pictures, plus a good selection of colour scheme drawings, this is a handy book for anyone modelling Albatros aircraft. Best of the latest batch is *Commonwealth Boomerang Described*, by G. Pentland, which is a most valuable publication for anyone modelling the Airfix Boomerang. Packed with pictures, drawings, colour scheme data, etc, it is a first-class little book, highly commended. A companion volume of great interest is *Wirraway and Boomerang Markings* by the same author. Entirely devoted to colour schemes it is full of tone drawings and rare pictures. *Markings of the Aces (Part 2 US Navy)* is also good value for it has colour covers and much useful 'gen' on US Navy markings in World War 2 quite apart from the specific information it provides on individual pilots' machines. For anyone who cannot afford the more expensive 'definitive' book by Thomas Doll on US Navy markings, this Kookaburra book is a reasonable substitute in its more modest way. Last new title is *Warplanes of the RAAF* which is, quite frankly, just a collection of not-very-rare pictures (24 in all) which are not really essential to anyone. It's nicely produced but if you've 8s 6d to spend, spend it on one of the other titles.

Picture album

RAILWAY HISTORY IN PICTURES: NORTH-EAST ENGLAND, by K. Hoole. Published by David & Charles Ltd, South Devon House, Newton Abbot, Devon. Price 42s.

IN 110 pages of photographs with very full captions are illustrated many of the features, locomotives, rolling stock, stations, signalling, civil engineering, etc, which have made up the railway scene in North-East England from the first stone railway bridge of 1727 to the present day. Plenty of 'atmosphere' and detail shots here are of value to the railway modeller.

Great Western

KINGS AND CASTLES OF THE GWR, by O. S. Nock. Published by Ian Allan Ltd, Terminal House, Shepperton, Middx. Price 13s 6d.

A first produced in 1949. Three new chapters bring the story up to date and all the photographs have been fully revised. This is a handy reference book for modellers of GWR locomotives. There are numerous useful illustrations.

GREAT WESTERN SHED DIAGRAMS, by E. G. F. Haswell. Published by Ian Allan Ltd, Terminal House, Shepperton, Middx. Price 15s.

TOTALLING 100 pages bound in stiff covers, this book contains diagrams illustrating the track layout, position of turntable, coal-stages and major items of all the main GWR locomotive sheds and most of the sub-sheds during the period 1950-59. It is full of nostalgia for all former GWR loco spotters and also invaluable for railway modellers. It is a pity, however, that there are no pictures and some explanatory notes, even if these made the book more expensive.

Travel guide

MOUNTAIN ROADS AND LAKE STEAMERS, by Cecil J. Allen. Published by Ian Allan Ltd, Shepperton, Middx. Price 45s.

THE fantastic engineering feats illustrated in this book are simply breathtaking. Individually and in isolation they would be

AIRFIX magazine

NEWS FROM

AIRFIX

The world's greatest value in construction kits

Boeing 747

Orion spacecraft

Waterloo Highlanders

BOAC's giant 'jumbo' jets—the 360-seat Boeing 747s—will soon be thundering into and out of Heathrow Airport, London, so the Airfix 1:144 scale model of this new jet is a timely newcomer.

Assembling the incredibly detailed 143-part kit brings some appreciation of the size and layout of the 350-ton real thing—each of which will cost the state airline some £10 million.

The actual aircraft—the biggest airliner in the world—can carry nearly 500 passengers, but the BOAC layout is for only 360 who will be accommodated in five spacious cabins. These passenger cabins have nine-abreast seating, two aisles, eleven toilets, six galleys and a crew of up to 20 stewards and stewardesses.

In addition to a full load of passengers the aircraft can carry 35 tons of freight—as much as an all-freight version of today's Boeing 707. Fuel capacity of the 747 gives it a range of 5,000 miles.

Interesting to assemble, the Airfix kit makes up into a model with an overall length of 19 inches and wingspan of 16 inches. A full set of authentic BOAC livery transfers is included in the kit which contains full assembly and painting instructions in easy-to-follow 'exploded' form. The kit costs 19s.

astounding enough. The fact that there are so many and that they come in such quick succession, page after page, make one reel at the impact. There are nearly 200 fully captioned photographs of superb quality and C. J. Allen's text is full of facts and figures. Much useful advice is given to would-be tourists, even a table which shows you which side of the train to sit to obtain the best views. A comprehensive travel guide which is also an absolutely splendid book.

In brief

AN essential book for all air enthusiasts is *British Military Aircraft Serials*, by Bruce Robertson, a revised and up-dated edition of which has just been published (Ian Allan Ltd, 35s). Packed with tables it lists all serial allocations (with much else related information) up to the present, security considerations apart. Latest issue in the Bellona Prints Series, No 19 (Bellona Publications, 4s plus 4d post), has 1:76 scale drawings of the Churchill I, Vickers 37 ton tank, French Panhard 178 Armoured Car, and US M6 heavy tank, all to the usual high standard of accuracy and packed with relevant data as well. Published in USA by

November, 1969



Though to 1:144 scale, the new Airfix model of the Boeing 747 'jumbo' jet is one of the biggest aircraft kits Airfix have yet produced. It comes with the proposed BOAC markings provided in transfer form.

NOW that man has been to the moon, the Orion spacecraft which is the subject of a new Airfix scale model construction kit is perhaps not so fanciful after all.

Featured in a leading motion picture, Orion is envisaged for use on a shuttle service between Earth and a space station which is permanently revolving above the Equator. The station acts as a base for spacecraft journeying to the distant planets.

The easy-to-assemble, 14-part model carries Pan American markings as this could well be the kind of craft the airline is operating in the 21st Century.

Full assembly and painting instructions, Pan American transfers and a mounting stand are included in the kit which is available at 10s 6d.

KILTIED troops that fought at Waterloo are the subject of the long awaited set of Airfix miniature figures of the Napoleonic period.

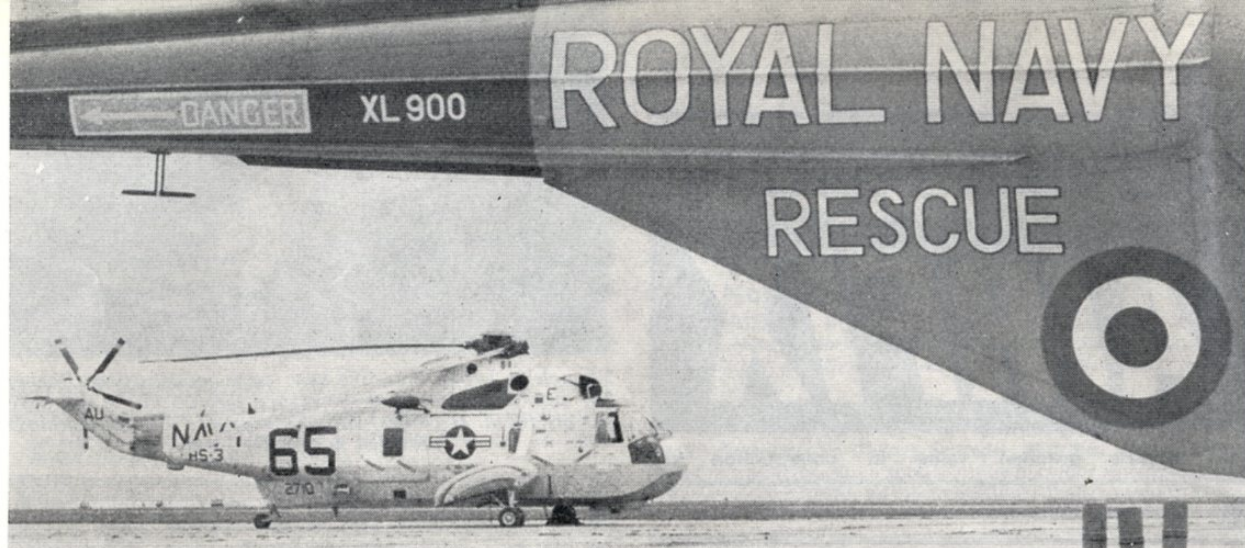
The set includes 40 one inch high Highlanders—some standing and others kneeling—complete with the weapons and accoutrements of early 19th century British Infantry. Various attitudes—aiming, loading, using the bayonet and with muskets at the port—are provided. A mounted officer leads the platoon, which also includes a drummer, piper, colour-bearer and two wounded Highlanders.

All that is needed to complete a colourful representation of British military history is a coat of paint.

The OO scale Waterloo Highland Infantry set is priced at 2s 9d.

Books—continued

Feist Publications is 1:72 *Aircraft Drawings* which features ten World War 2 aircraft including the Spitfire IX, Fw 190, Stuka, Mustang, He 100, etc. It has a tone drawing, big picture, and basic data on each. However, in our view its value is limited as no colour information is given, essential if the excellent tone drawings are to be interpreted by modellers. Far better if the book was published in colour at twice the price. As it is, all the information in this book can be found fairly readily in existing publications (Bellona Publications, 16s plus 1s post). The book of wargame rules for 'Ancient' wargames which we reviewed some months ago has now been reprinted in a second edition with amendments and extra material. If you missed it first time round and are interested in the Romans and their contemporaries send a SAE to Bob O'Brien, 75 Ardingly Drive, Goring-by-Sea, Sussex, for further details. It includes modelling and painting hints as well as the rules themselves. Latest two titles in the Aircam series, *Supermarine Spitfire Mk XII-24* (it includes Seafires), and *Lockheed P-38 Lightning* (Osprey Publications, 21s each), follow the usual format with masses of good rare pictures and paint schemes in colour plates and line drawings. Top value for modellers, these are available from most book shops and hobby shops. Finally, a new Aircraft Profile appears, the *B-17G Flying Fortress* in the usual format with full colour centre-spread, copious text, and plenty of pictures (Profile Publications, 5s). Most hobby shops stock Profiles, plus all the earlier titles which are now again available.



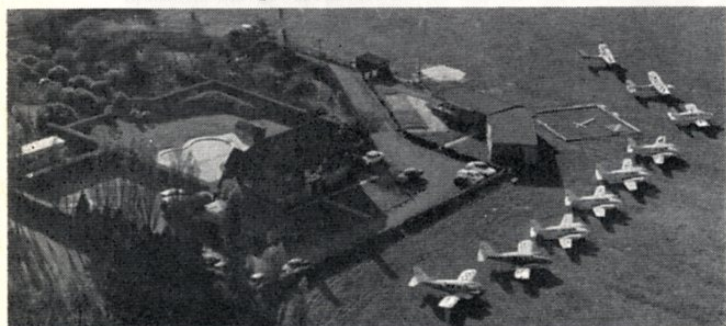
For modellers who wish to alter the markings of the new Airfix SH-3D Sea King kit to depict the aircraft which picked up the Apollo 11 astronauts on their return from the moon, here is a glimpse of the machine involved; 2710/65/AU was pictured framed by the tail of a Fleet Air Arm Whirlwind when it visited RNAS Culdrose from USS Yorktown on September 24. Colour scheme is as given in the Airfix instructions and only the numbers need changing. Note the efficiency 'E' abaft the cockpit, however (Photo courtesy RNAS Culdrose).

ALTHOUGH there are an increasing number of small companies entering the third level or air taxi operator class, one of the names that stands out above all is that of Air Gregory.

To find out more about how this company operates and something of the background of a taxi company I recently visited the Air Gregory headquarters at Denham airfield, Bucks, and spoke to Mr Michael Costello, the company secretary, who has been with them since the beginning in January 1963.

The original partnership was founded by Mr Ken Gregory of motor racing fame. The first aircraft used was a Cessna which was purchased in February 1964. The company flourished quickly and very shortly Mr Gregory took over the flying school at Denham which had previously been run by the London School of Flying and Marshall Dunn Aero Engineering to provide the stores, servicing and major maintenance backing for the project.

A Piper Colt was hired and this was quickly followed by the purchase of two new Colts and a Piper Cherokee 140. New offices were built beside the Country Club on the airfield and a comprehensive flying programme of training and charter work put in hand.



Above: Reminiscent of a 1930s aviation scene, the quiet setting of Denham golf course and country club forms a background for Air Gregory operations. Here the training fleet and part of the air taxi fleet based at the Buckinghamshire grass airfield are lined up outside the company's headquarters.



Air Gregory became the first company in the UK to offer a jet taxi service when DH 125 'SNU' was bought at the end of 1966 and the whole operation sprang into prominence when this aircraft was hijacked over the Mediterranean whilst carrying ex-President Tshombe and forced to fly to Algeria where the passengers and aircrew were interned. 'SNU', which has now been sold by Air Gregory, was away for six weeks and although the company lost a lot of revenue the publicity they achieved was world-wide. Jet operations still continue but now HS 125 'WUF' carries the company's 'G' and arrowhead insignia.

Air Gregory was one of the first European companies to pioneer filming from helicopters. They went even further recently when live TV broadcasts were made from one of their aircraft adapted for this purpose.

Operations began in January 1968 when an Alouette II was purchased ('VEE'). Later a Hughes 300 joined the fleet and more recently one of the first Hughes 500s to reach this country brought a new standard to helicopter flying on a civil commercial basis.

Now Air Gregory run a Board of Trade approved helicopter instructional course and have the UK franchise on Hughes helicopters. Asked how they compared with the now popular Bell Jet Ranger, Mr Costello quoted the fact that the 500 model could carry 100 lb more than a Jet Ranger and that it was 20 mph faster. It will even carry 40 lb more

passengers or freight than the much larger Alouette III and costs in the region of £50,000 depending on the scale of equipment installed. Added to this the Hughes 500 has a proven record of service in Vietnam and has a safety factor far ahead of its nearest rivals.

On the films side, Gregory's have virtually cornered the market. Mr Gregory developed a special camera mount for the helicopter which is said by film men to be the best in the business. The Alouette II is the aircraft used mainly for film work and it has taken part in many major British films in recent months. The chief pilot of the helicopter flight, Mike Smith, flew the aircraft during the first live air TV presentation at Brands Hatch motor racing circuit and more recently on the Welsh TV series touring that country during the investiture of the Prince of Wales. Whilst I was at Denham the aircraft with Mike at the controls was filming near Brighton.

The most obvious part of the Air Gregory organisation, to those visiting Denham at least, is the flying training side. The school, which employs 10 full-time instructors, is approved for the 35 hour private pilot's licence course and at present there are about 200 members in the club, most of whom are on PPL or more advanced courses.

The training is mostly completed on Cessna 150s but there are two Cherokee 140s, a Rollason Condor and a four-seat Cessna 172 for advanced training and hire services. The company try to cater for the family visit to the airfield whilst father gets airborne. A country club and swimming pool are close to the club premises, both of which have been well patronised during the recent summer.

One of the most lucrative of Air Gregory's contracts is for the training of Air Traffic Control cadets for the Board of Trade and the Air Training Corps scheme of flying scholarships. I was rather surprised to know that not all of the latter were taken up by ATC boys last year.

Training costs £9 per hour and the school is run on very commercial lines. A receptionist meets the new arrival and there's a comfortable lounge in which to wait for one's turn or for the weather to clear. A small shop caters for the needs of the average private pilot, providing maps, books, and other necessities from an adequate stock. All of the instructors wear uniform and several are direct products of the Air Gregory School. One to whom I spoke had given up a profitable chartered accountancy career because he felt the desire to fly more than sit at an office desk. Once the student pilot passes his PPL he is given a club tie with a single star woven in gold under the 'G' insignia. Further advancement to instrument rating and so on qualifies the wearer for extra stars on the tie.

In addition to the facilities at Denham, Air Gregory own and run Midfly which operates from Birmingham (Elmdon). Aircraft and instructors are often exchanged if pressures on the available facilities at either venue become excessive.

Ken Gregory, the founder of the company, recently retired from his position as managing director. Previously, in February this year, the company had released 60 per cent of its shares to the Bristol Street Group, who are a £7M public company operating in the motor trade mainly in the Birmingham area, but also at other places in the Midlands and South of England. They also own Spurlings the brake manufacturers, Rumbolds the aircraft interior furnishers, and many other well-known companies.

Whilst I was at Denham I met one of the Bristol Street directors, all of whom are young men in their early forties. Tom Cannon, who has risen rapidly with the company, joined Bristol Street in 1951 as a cashier. He became company



Top: Workhorse of the taxi fleet owned by Air Gregory is Aztec 'SRI'. The company also own Twin Commanches, Doves and a HS 125. Above: Main training aircraft in the Air Gregory fleet is the Cessna 150. Here is 'VPH', one of the first aircraft they acquired.

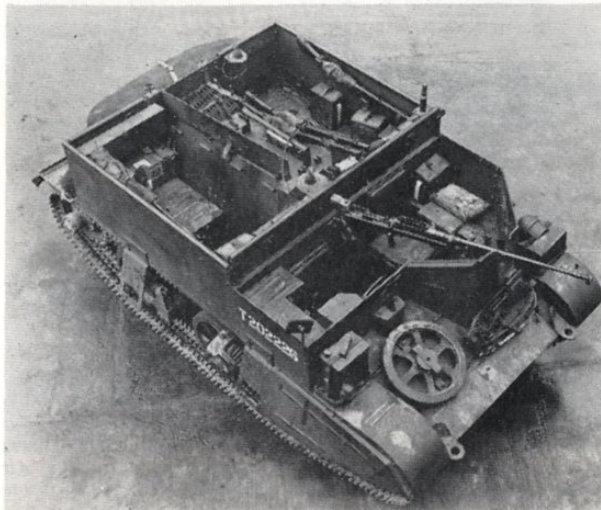
secretary and had a lot to do with their associated hire purchase finance house. Tom, who is only 40, has replaced Ken Gregory as top man in the Gregory organisation and says he hopes to build up both the sales and flying training sides of the business. Now that the Hughes agency has joined Gregory's earlier Cessna dealership, they stand a very good chance of breaking even more into the competitive market of aircraft sales so that in time it will equal their already profitable charter company.

Asked if he was a pilot himself, Tom said that he didn't have the time though he frequently flew in company aircraft when the occasion demanded. 'Business is my hobby,' he said, and it certainly looks as if efficiency and profit is this company's byword.

During the last few years I have seen many private flying organisations but few have come up to the obvious organisational ability and hard-headed business outlook of Air Gregory. Their present staff of 52 is small when compared to some of the large airlines but with the rapid expansion in the last few years of air taxi work, the continued growth of the private flying movement in spite of restrictions and expense and the new bright outlook they have for sales of both fixed and rotary winged aircraft, the future looks bright indeed.

THE AIR GREGORY FLEET

Air Taxi	Registration	Remarks
Piper Aztec	G-ASRI	
Piper Twin Comanche	G-ASMR	
	G-ASON	
	G-ASYK	
	G-ASYO	
Hawker Siddeley Dove	G-ALBM	Based at Luton
	G-ANMJ	Based at Luton
	G-AWUF	Based at Luton
Hawker Siddeley HS.125		
Helicopters		
Alouette II	G-AVEE	Specially equipped for film work
Hughes 500	G-AXEJ	
Hughes 300	G-AVZC	
Hughes 269A	G-AVWL	
Flying Training		
Cessna 150	G-AWGK	
	G-AWTJ	
	G-AVAP	
	G-AVPH	
	G-AVZU	
	G-ATJP	
	G-ATJE	
	G-AWTI	
	G-AWST	
Piper Cherokee 140		
Cessna 172		
Rollason Condor		
Two aircraft operated by Midfly are: Cessna 150, G-AWLY, and Cherokee, G-ASRW.		



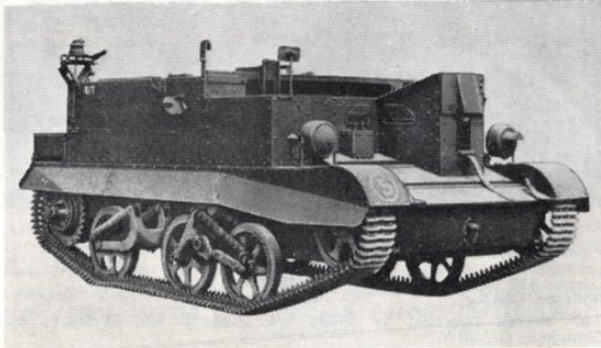
Above: Carrier Universal No 1, Mk II shown with standard stowage for a vehicle of the Carrier Platoon of an infantry battalion. Note the Boys anti-tank rifle. This view should be useful for anyone detailing the Airfix carrier.

Part 5: Universal Carriers

INTRODUCED into service in 1940, the Universal Carrier was designed to perform the role of both the Bren and Scout Carrier. The general construction of the hull was a combination of both these machines, but with protection plates on both sides and at the rear, the previous machines only having armour plate on one side of the vehicle. The engine cover was of a modified design having bullet-proof plates on top only, the side plates being of mild steel and easily detachable. Angular mud deflectors were fitted on the front track guards, and two rear steps were fitted, one each side of the vehicle. A crew of three was carried, two in the front compartment, the driver and gunner, with a third man seated in the rear right-hand side of the hull. The main weapon fitted in the gun housing varied, and was either a .55 inch Boys anti-tank rifle, a .303 inch Bren LMG, or even a Vickers .303 inch medium machine gun (this latter was common practice on Australian carriers). When the Bren LMG was fitted in the machine gun housing the vehicle was sometimes erroneously called a Bren Carrier.

These vehicles were often re-armed in the field to suit users' requirements and were fitted with a variety of weapons, which included: .30 inch Browning MG, .50 inch Browning

Below, left: The Canadian-built Universal Carrier No 3, Mk I* fitted with sand shields as part of its desert equipment. **Below, right:** Carrier Universal No 3, Mk I*, 2 pdr equipped, built and used in Canada.



MG, German 20 mm Solothurn anti-tank gun. These weapons were usually mounted on pintle sockets in the rear compartment. Light weapons like the PIAT were sometimes fitted in the front compartment.

Several carrier units, to achieve extra fire-power, mounted the 2 inch mortar on the engine cover of their carriers. The desirability of mounting these mortars as vehicle equipment for certain roles led to the preparation of a design of mounting to be fitted in the gunner's compartment. This became a standard fitting in 1943, being included in all Universals of Mark II standard. The stowage arrangement of equipment in the carrier depended on the role that the carrier was to undertake, eg, Scout or Infantry carrier, etc.

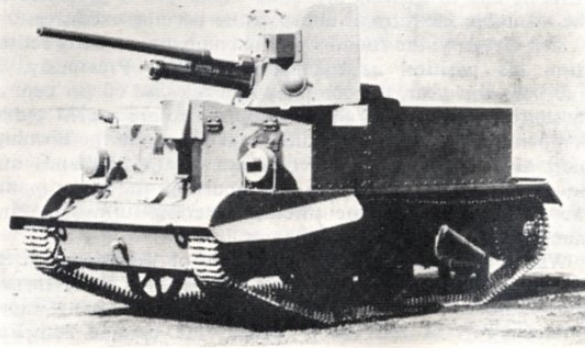
Used initially in the Western Desert and subsequently in all campaigns in all theatres of war, Universal Carriers were supplied to all Allied armies (Russia receiving 200) except the USA. The Carrier Universal Mk I designation covered also the Bren and Scout Carriers that were converted to Universal standard. The Universal Carrier remained the standard combat carrier throughout the war. Apart from



improvements in design the only wartime developments were the production of specially modified versions, the Artillery OP Carrier, 3 inch Mortar Carrier and carrier for flame-throwing equipment. Brief details: Crew, 3; Weight, 4 to 4½ tons; Armament, 1 x .55 inch Boys Anti-Tank Rifle or 1 x .303 inch Bren LMG; Engine, Ford V-8, 65 bhp; Speed, 30 mph. Armour basis, 7-10 mm. Provision was made for the fitting of a No 11 wireless set.

The different models produced are summarised below.

Carrier, Universal, No 2, Mk I: Similar to Mk I, but with Ford V-8, 85 bhp GAEA engine. Built in America for Allied use.



Carrier, Universal, No 2A, Mk I: As for Mk I, but with Ford V-8, 85 bhp GAE engine. Built in America for Allied use.

Carrier, Universal, No 3, Mk I*: As for Mk I, but with Ford V-8, 85 bhp engine. Canadian production.

Carrier, Universal, No 1, Mk II: This model resulted from an attempt to improve the original Universal and featured a welded water-proofed hull and new type of stowage arrangement. This latter varied with the role of the carrier, ie, Scout Carrier of Motor Battalion, Platoon Carrier of Infantry Battalion, etc. It was fitted with a 4 inch smoke discharger generator or a 2 inch mortar on the left side of the gunner's compartment. The front quarter of the track run was totally enclosed by a valance. Four foot steps were fitted, two each side of the vehicle, and a spare wheel and tow rope was carried across the rear of the hull. Brief details: Crew, 4; Weight, 4½ tons; Armament, 1 x Boys Anti-Tank Rifle or Bren LMG; Engine, Ford V-8, 85 bhp; Speed 30 mph; Armour basis, 7-10 mm. The carrier modelled by Airfix is of this type.

Carrier, Universal, No 2, Mk II: As for Carrier No 1, Mk II, but with a Ford V-8, 85 bhp GAE engine. Built in America for Allied use.

Carrier, Universal, No 2A, Mk II: As for No 1, Mk II, but with Ford V-8, 85 bhp GAEA engine. American production.

Carrier, Universal, No 3, Mk II*: As for No 1, Mk II, but with Ford V-8, 85 bhp engine. Built in Canada.

Carrier, Universal, No 1, Mk III: Welded hull as Mk II, but with modified air inlet and engine cover. Details: Crew, 4; Weight, 4½ tons; Armament, 1 x Boys Anti-Tank Rifle or Bren LMG; Engine, Ford V-8, 85 bhp; Speed, 30 mph; Armour basis, 7-10 mm.

Carrier, Universal, No 2, Mk III: As for Mk III, but with Ford V-8 85 bhp GAE engine. Built in America.

Carrier, Universal, No 2A, Mk III: As for Mk III, but with Ford V-8 85 bhp GAEA engine. Built in America.

Carrier, Universal, No 3, Mk III*: As for Mk III, but with Ford V-8 85 bhp engine. Canadian production.

All Ford V-8 engines of 221 cubic inch capacity (85 bhp) of American, Canadian or British production, less their ancillary equipment like carburettors, electrical fittings, etc, were basically interchangeable as an assembly in any Mark/Type of Loyd or Universal Carrier manufactured to the Canadian or British Specification.

Carrier, 2 pdr Equipped: This was the Universal Carrier Mk I* and Mk II* modified to permit the mounting of a 2 pdr gun with necessary ammunition and stowage. The ammunition was stowed along the sides and the front of the division plate. The engine cover was redesigned to provide adequate clearance for the recoil of the gun. A total of 213 of this version were built in Canada and were used for training in that country.

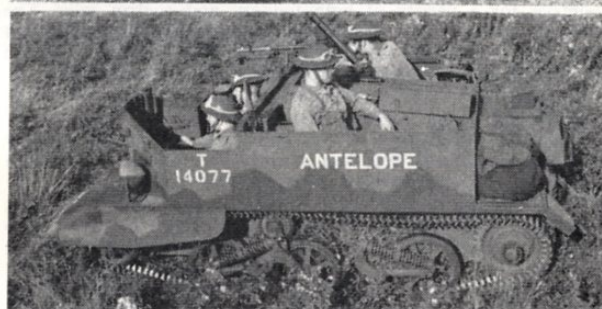
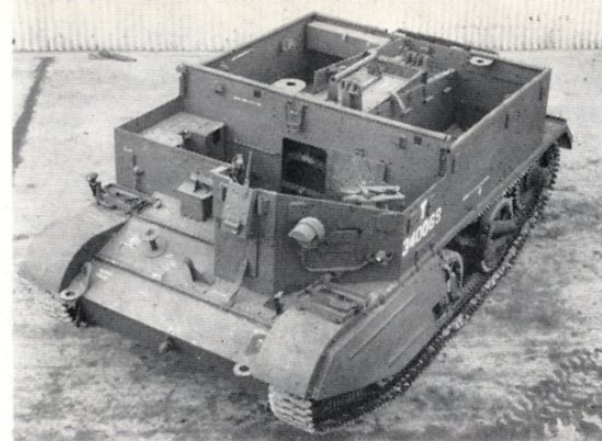
Typical WD numbers for the Universal Carrier Mk I are given here though this listing is not exhaustive.

British built: T.6079-T.6728; T.7441-T.8090; T.8120-T.8419; T.8420-T.9095; T.10678-T.11677; T.11678-T.12677; T.12678-T.13677; T.13678-T.14677; T.20494-T.21893; T.21954-T.22653; T.28141-T.28840.

American and Canadian built: T.22654-T.22703; T.28841-T.29790; T.36021-T.37120; T.41469-T.42868; T.42869-T.43651; T.49250-T.58134; T.59184-T.59683.

Canadian War Department vehicles had the prefix 'CT' rather than 'T'.

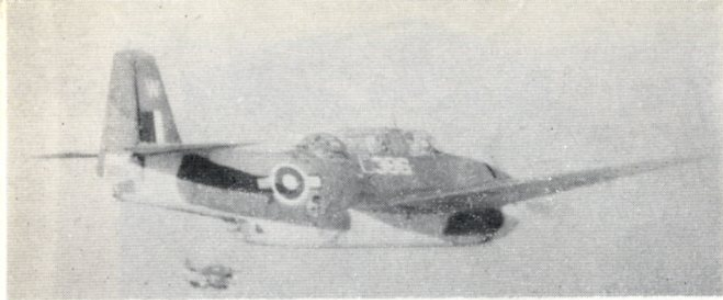
November, 1969



Top to bottom: Carrier Universal No 1, Mk III, which was an all-welded vehicle. A standard Carrier Universal No 1, Mk I. Carrier Universal No 1, Mk I, with 2 inch mortar carried on engine cover. A Universal Carrier No 1, Mk I, fitted with a captured German 20 mm Solothurn anti-tank cannon and pictured on the Italian front (All photos Imperial War Museum).

AMENDMENTS

In last month's issue the captions relating to the two Carrier types with guns, the 2 pdr and the 40 mm, were inadvertently transposed and readers should mark them as such accordingly. Also in last month's issue, the OV-10A Bronco given as being from HML-267 is, in fact, from VMO-5.



Above: Avenger TB II JZ386:386 of 857 Sqn FAA aboard HMS Indomitable, British Pacific Fleet Task Force 57 attached to US 5th Fleet, 1945. Code numerals 386 are in white on each side of the fuselage, the 'W' which identifies the carrier Indomitable is also white above the fin flash. Note that the small raised panel below the rear of the main canopy (also in the model) is thinly outlined in white on some aircraft as here. Standard BPF white/blue/white insignia appeared (in US style) in four positions, ie, port upper and starboard lower wings. Note camouflage demarcation line (Photo A. H. Hanks via M. Garbett).

Avenger details and markings

DESCRIBED BY ROBERT C. JONES, DRAWN BY TONY BOULTON

THE Grumman Avenger served well during the second world war and it was not surprising that this rugged and powerful aeroplane should be adopted and adapted by many services and countries for a variety of both military and civilian roles. The Airfix kit of the TBM-3 is regarded by many as one of the finest Airfix kits to date and the drawing page shows several alternative finishes and detail conversion suggestions from the basic kit.

To model early TBF/C wartime Avengers the main item to be modified will be the cowling. The earlier machines had only one intake at the top of the cowl rim, and the bottom intake must be filled with body putty and then trimmed and sanded to a smooth shape. The photographs show the exact form the earlier took.

To model any specific naval Avenger one should, if possible, work from a photograph of the chosen subject as apart from having to identify the variant that you are modelling it will be found that such items as underwing stores-racks and lower rear window layouts differ considerably even between aircraft of the same basic mark. The two types of lower rear window are (a) flat glass panel for US and ex-US TBF/Ms, while, (b) those used by the RN have a clear dish or circular dome over the original window orifice. This can be moulded by the methods frequently recommended by Alan Hall or you may find a suitable astro-dome among your 'spares'.

The simplest, and yet one of the most colourful conversions, is that for the TBF-TT target-tug used by the RNZAF. Assemble the kit as per the instruction sheet but omit the rear gun detail and fill in or similarly replace the underside rear transparency by using plastic card cut to shape, leaving just the flattened rear face of the glazing. This can be made from ordinary Polyglaze clear sheet as it is completely flat. The cockpit canopy is trimmed at the open (turret) end and again clear plastic sheet is used to make a flat window panel which butts on to the circular panel fitted over the original turret position. Sometimes the flat window was omitted. Plastic or thick paper can be used to cover the turret hole after the rim has been filed down.

The RCN TBM-3 with the revised rear hood is a much more complex conversion as you will have to mould your own revised rear cockpit transparency, although you may well be able to find an odd bit of canopy or windshields left from other kits among your 'spares' which could be suitably modified for the purpose. Perhaps a word here on working with old canopy transparencies and turrets may be of interest. You can, of course, cut, sand and file these like any other form of polystyrene, but this does scratch and similarly mar the clarity of the glazing. However this can be overcome by the following procedure:

Having obtained the correct or required shape for the part you need, wash this in warm water to which are added a few drops of washing-up liquid - polish this to dry it with a very soft cloth.

Next use Silvo silver-polish (not Brasso as in some cases this is too harsh) to buff the canopy thereby removing the now visible file or sandpaper marks. Keep polishing and alternatively buffing with Silvo until all the scratches, etc, have disappeared. Then simply wash the part again in warm water and washing-up liquid and leave to dry naturally. Do not polish again at this stage as this causes static on the part which will attract dust. Finally when the part is really dry give it a coat inside and out of clear varnish, slightly thinning this with turps or similar thinners as this (a) reduces the thickness of the varnish itself and (b) in reducing the thickness also reduces the possibility of the varnish eventually yellowing.

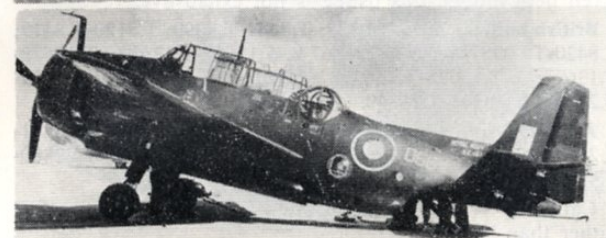
Should you model a wartime Avenger, any variant that is, then don't forget that naval aircraft were very quickly weathered and dirtied due to salt water erosion, etc. Usually after each flight the aircraft were washed down with fresh water but this did not help in retaining the original factory fresh finish of the original paintwork. To obtain a weathered/faded effect without actually changing the correct base colour of the paint simply add a few drops of

ordinary cigarette lighter fuel stirring this into the paint just prior to actually painting the model. Alternatively, in the case of aircraft serving, say, with the British Pacific Fleet then add a tiny touch of matt yellow to the basic colour. This produces a greeny tinge to the factory finish, a common phenomena on naval aircraft in that theatre of operations.

Briefly after mid-summer 1940 the Fleet Air Arm carrier borne aircraft both fighter and torpedo planes used a standard finish of Dark Slate Grey (a dark grey-green) and Extra Dark Sea Grey upper surfaces with Sky Type 'S' undersides. Deviations from this included Swordfish flying from escort carriers where in 1941 Matt

Below: Avenger JZ490 of 758 Communications Sqn FAA, HMS Merlin, which was the Donibristle shore station ferry flight. Note AAFF stripes completely cover original fuselage codes; finish is as heading picture, ie, Dark Slate Grey/Extra Dark Sea Grey above and Sky Type 'S' undersides, and natural metal prop hub. Note that part of the 4 inch high serial and RN lettering is obliterated by AAFF Black and White stripes. The interesting personal marking of the cigar-smoking wolf head just below pilot's cockpit was reddish-brown with black and white detail (Photo M. Heaton via R. C. Jones).

Bottom: KE461, an ex Lease-Lend Avenger in post-war FAA service with similar finish to 075 on our drawings page. This photograph clearly shows the bulged lower side windows just aft of the trailing edge of the wings. Note squadron badge just below pilot's cockpit (Photo by Robert C. Jones).



AIRFIX magazine

1841 Sqn badge:
bright blue and white
background, black letters,
remainder gold

Sea Blue Gloss	Dark Sea Grey	Sky	Black	Gloss Yellow	Silver Dope	Red
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Avenger AS4 of No 1841 Sqn, RNR, Stretton, 1957
XB302:075

Note squadron badge each side of cowling (below)

Natural metal spinner

All serials and codes in white

Underwing markings for XB302

Note: no gun in turret
Red/white bands on hook

Modified TBM-3 of Royal Canadian Navy (squadron unknown)

53826:328 Red spinner

All serials, codes, lettering in black

Underwing markings for RCN machine

Underwing markings of RNZAF machine (NB: circles mark upper wing roundel positions for RCN and RNZAF aircraft)

Natural metal spinner

Detail view of modified canopy for RCN TBM-3

Note cover over turret aperture

Note addition of tailplane guards

TBF-TT of No 42 Sqn, RNZAF 1950

Black serial

Upper wing markings, repeated on opposite underwing surfaces

TBM-3E, BuNo 53686 of US Navy (unit unknown)

No blue in US markings
All markings in white

NB: this aircraft has radar pod under starboard wing of type supplied in Helldiver kit

WAR EMERGENCY DESTROYERS

The 'O' to 'Z' classes described and modelled

By PETER HODGES

PREVIOUS articles in AIRFIX magazine have dealt with a number of British destroyer classes and have given details for the conversion of the existing Airfix *Hotspur* and *Cossack* kits.

Chris Ellis has covered the 'A' to 'I' class ships, Ian Whitehead the 'J' to 'N', while Allan Gwinnell has shown us the detail differences in the 'H' boats as a whole.

My own earlier destroyer article jumped to the 'Battle' class (July 1969) thus creating a gap of ten classes to say nothing of the extensive group of 'Cs' which followed.

The aim of this article is to deal with the majority of these classes. It will be divided between this, the first part, in which the background of the ships will be traced; and a second part, next month, which will detail the conversion of the *Cossack* kit.

As has been said elsewhere, the emergence of the 'Tribal' class ships before the war, heralded a new concept in destroyer design. But although the 'Tribals' were very fine vessels in many ways—and sixteen were built for the Royal Navy—they were expensive and could not be produced quickly.

They were followed by a reduced design in the 'J', 'K', and 'N' classes, which suppressed one 4.7 inch mounting and re-introduced two sets of torpedo tubes; and this in turn was revised to produce the big 'L' and 'M' class ships. Like the 'Tribals', the five classes were similarly expensive, so that at the outbreak of the second world war it quickly became clear that a simpler vessel was required. It was to embrace the constructional features of the post 'Tribal' ships—that is, to be longitudinally framed, and to have a single funnel—but to revert to single hand-worked 4.7 inch guns instead of the power operated twins previously fitted. As might be imagined both types of twin 4.7 inch mounting were complex and took many months to complete. The standard arrangement of Fire Control equipment introduced in the 'Tribals' was to be retained and full torpedo armament carried.

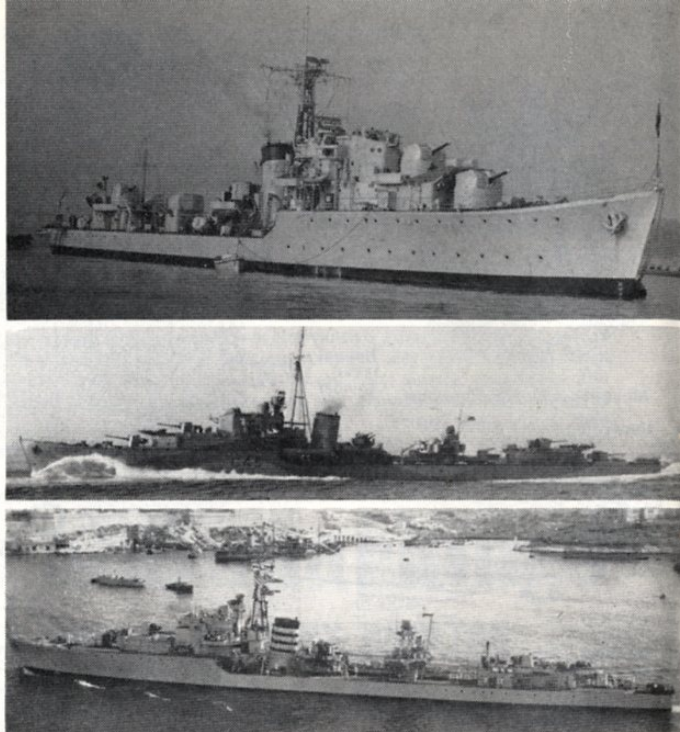
The outcome was the War Emergency classes, so very nearly identical that one basic hull served for most ships.

THE 'O' AND 'P' CLASS

The first sixteen ships were somewhat makeshift, no doubt caused by the transition from their big predecessors. Insufficient guns of 4.7 inch calibre were available for first fitting, and most 'O' and 'P' class had an extemporary armament of four elderly 4 inch HA guns of 1918 vintage. Some, indeed, were completed without the after bank of torpedo tubes, the site being taken up by a fifth single, open 4 inch HA. The other 4 inch guns in the conventional positions usually had substantial gun shields, and all sixteen ships were designed for rapid conversion to mine-layers.

In keeping with their armament, they had a small open topped dual-purpose director on the bridge, of much the same style as the HA director in the 'Tribals', but not mounted on a 'stalk'.

Compared with their successors, the 'O' and 'P' classes had a noticeably different bow. The rake was more upright and the fore-castle deck rose sharply in the eyes of the ship, giving it a 'trawler bow' appearance. Altogether, this bow arrangement reduced the overall length from the standard ship which was to follow and because this makes conversion difficult I have not attempted to detail the work involved.



Above, top to bottom: HMS Opportune shows the shorter 'trawler' stem which characterised the 'O' and 'P' classes, and the old 4 inch guns with which these earliest classes were armed. Note the mine laying chutes at the stern and the lattice mast which was a post-war fitting. HMS Quail shows the early small shields fitted to the 4.7 inch guns of the 'Q' and 'R' classes, also the 'Quad' pom-pom abaft the funnel (P. A. Vicary). HMS Rotherham in 1945 with red/white candy stripe funnel bands as a flotilla leader and red/yellow Carley rafts. Note the prominent warning surface radar aerial on its pylon amidships and the catwalks between the after deckhouses (A. & J. Pavia).

THE 'Q' AND 'R' CLASSES

The final hull design came closer in these two classes, although there were again slight differences. The bow became more raked, and the 'trawler' appearance was less evident, but it had not yet taken on the final form. Nevertheless, these minor differences were hardly noticeable, so one basic hull will now apply.

This group of sixteen had their proper main armament of single 4.7 inch guns, similar in appearance to those fitted in the 'H' and 'I' class destroyers. They were protected by a small rather box-shaped gunshield, and were controlled by the standard arrangement of DCT for surface fire and HA range-finder director for AA.

The close-range armament comprised various combinations of pom-poms and 20 mm Oerlikons, both calibres being largely supplanted by 40 mm Bofors towards the end of the war.

THE 'S' CLASS ONWARDS

The hull had by now been finally standardised and the ships followed in alphabetical class order through to 'Z', but excluding 'X' and 'Y'. No doubt the task of finding eight understandable names beginning with 'X' was too much for a hard-worked Admiralty Ship Name Committee, but the exclusion of eight 'Y' class is not understood.

The 'S' class introduced a new 4.7 inch gun mounting in a much more substantial shield, affording a higher order of protection for the gun crew, at the same time making the mounting more weatherly. One ship of the group—*Savage*—was selected as a trials ship for the new twin 4.5 inch mounting destined for the forthcoming 'Battle' class ships. Her own 'A' and 'B' guns were replaced by the prototype twin fitted in 'A' gun position; and to preserve uniformity of calibre, the single 4.7 inch guns in 'X' and 'Y' positions were exchanged with identical mountings, re-barrelled with 4.5 inch calibre guns. *Savage* can therefore be said to have introduced both the 4.5 inch single and

the 4.5 inch twin into British destroyers, although many more ships were to be launched before this calibre became standard.

The same 4.7 inch gun was fitted in all the classes that followed up to the 'Z's, which, with the 'Ca' group, were equipped with the re-barrelled 4.5 inch version. All these mountings were hand-operated, or 'handraulic' to use Naval jargon.

Finally, the remaining three classes of the 'C' group were given a power-worked model, identified by a small look-out hood on the right hand side of the gunshield roof. This mounting was remotely controlled by the Fire Control System. It also appeared in 'Q' position on the '1943 Battle' class, and, much modernised, is fitted in the present 'Tribal' class frigates.

The DCT/HA Director arrangements on the bridge remained constant through to the 'V' class, but by this time a new Fire Control system was under development which would require one dual-purpose director. The 'W' class, therefore, reverted to the original 'O' and 'P' class equipment of a small HA range-finder director, while the 'Z's and 'Ca's had quite a large power operated tower, employing the final design of gyro-gunsight.

Thenceforth, all destroyers were given the twin-nacelled director which made its last appearance in the 'Darings' in their original form.

THE 4.7 INCH CALIBRE GUNS

The earliest 4.7 inch guns in destroyers had been of the screw-breech type, but these were quickly superseded by the Quick-Fire mechanism employing a horizontal sliding breech block. As the maximum elevation increased, loading trays were provided to ease loading at the higher angles and at the same time to reduce the effort involved. Semi-automatic operation of the breech was evolved which caused it to close by the action of a spring when the cartridge was rammed. Conversely, it opened automatically when the gun ran out after recoil, ejecting the empty cartridge case to the rear, and resetting the breech mechanism for the next cycle of operations.

One of the advantages of the twin 4.7 inch mountings was their power-operated loading trays and rammers. This facility was not available in the single hand-worked guns, but later in the war spring-operated rammers were developed. They were cocked by recoil, their introduction further increasing the rate of fire.

THE CLOSE RANGE ARMAMENT

The classes of between-wars destroyers from 'E' up to 'I' relied almost entirely on two sets of quad .5 inch Vickers machine guns for their AA defence, because their main armament with its limited elevation was not really suitable for use in this rôle.

The 'Tribals' introduced the four-barrelled 2 pdr pom-pom to destroyers and this was a much better proposition. Like its eight-barrelled big brother—fondly known as the 'Chicago Piano'—it was able to put up a veritable hail of 2 pdr shells in the general direction of the target. Diving towards the muzzles of a well aimed pom-pom must have been a daunting business.

Below: HMS Savage with twin 4.5 inch turret forward and single 4.5s aft. Note searchlight abaft funnel and warning surface radar aerial on a 'solid' tower. Oerlikons flank each. **Bottom:** HMS Vigilant with warning surface aerial on foremast, lattice masts, searchlight abaft funnel and Bofors amidships (Imperial War Museum).



Above: HMS Zodiac with typical late fittings—lattice masts, twin Bofors amidships, a single director, and 4.5 inch guns (Imperial War Museum).

After a preliminary appearance on the after superstructure of the 'Tribal' class, the familiar 'Quad' settled itself just abaft the funnel on a number of successive classes, handsomely supplementing the somewhat obsolescent multiple .5 inch machine gun mountings. The 'Quad' in destroyers, from being a hand-worked mounting in its early days, was quickly adapted for power control, although space limitations prevented it from being controlled by its own pom-pom Director. In larger vessels, each multiple 2 pdr had its own Director, and indeed, latterly in the war, its own prediction system and radar, too.

By the time of the advent of the 'O' and 'P' classes, the production of the 20 mm Oerlikon gun had got under way, although only single hand-worked mountings were available in the first instance. As the classes evolved, the Oerlikon armament (which had superseded the .5 inch machine guns) was gradually doubled up by the installation of twin power operated mountings.

The Oerlikon, a Swiss design, had a high rate of fire, better hitting power, and greater range than the earlier machine guns. But it, too, was found to be incapable of destroying a plane in the sky, so that when the Japanese 'Kami-Kaze' attacks developed in the closing stages of the Pacific war, the Oerlikon was supplanted by the 40 mm Bofors.

In the same way, the 2 pdrs were ousted by the twin 40 mm Bofors in destroyers, although with director control, the pom-pom did continue to serve in larger ships.

Strangely enough, the single Oerlikon mounting reappeared in the post-war frigates and destroyers quite recently. However, in this application it was installed to give them a weapon which could be used to cover small ships under interrogation, when the use of the main armament of guns or missiles was not justified.

TORPEDO TUBES

The quadruple torpedo tube mounting had been introduced very early in the between-wars building programme, and, by the time the 'G' and 'H' classes were launched, a five-fold or 'Pentad' mounting had been developed. *Glowworm* was the trials ship for this weapon which was then fitted in the successive classes up to and including the 'N's, but excluding the 'Tribals'.

The Pentad mounting did not meet with whole-hearted approval and in some instances the centre tube was removed thus effectively turning it back into a quad. With the emergence of the 'O' class, a quad mounting proper was fitted, but it now had an armoured cupola over the control position.

Torpedo tubes on destroyers were always trained on to the beam—ie, at 90° to the ship's centre-line—for a torpedo attack, and the 'tin-fish' were fired from a torpedo sight on the bridge, the ship's course being directed as necessary. It was also possible to pre-set the torpedoes to turn through a set angle on entry into the water, enabling them to be launched while the attacking destroyer was still closing with the target. Usually, however, the torpedo course was at right angles to that of the firing ship.

SEARCHLIGHTS

A large searchlight on the centre-line aft was standard equipment for most destroyers and continued to be fitted, even after radar was well developed. Towards the end of the war, however, this searchlight was removed, and in some ships, where it had been mounted

Continued on next page

Destroyers—continued

immediately abaft the funnel, it was replaced by a single 40 mm Bofors.

HMS *Tumult* is an example, and I have included her next month to show an 'up-gunned' variant. Post-war, the armament of individual ships of all classes was frequently upgraded or downgraded to suit existing requirements.

MINE LAYING

Because of their inherent high speed, the use of destroyers as mine layers has always attracted. The pre-war 'G', 'H', and 'I' classes were designed for rapid conversion to this rôle, and this adaptability persisted until well after the war, when some of the 'Ch' group were so modified. The conversion usually meant a reduction in torpedo and/or gun armament because not only was there a need to preserve stability, but also, the presence of the mine rails on each side of the main deck fouled the torpedo discharge. The rails ran almost the full length of the main deck, from just abaft the boats to the quarters. Here, a projecting platform carried the mine clear of the ships' stern, where a short power-operated endless chain conveyor completed the final dropping action. However, none of the ships of the group I will be featuring were modified for mine laying.

MINE SWEEPING

Pre-war, many classes of destroyers were given special mine sweeping equipment, designed to be towed at high speed. It took the form of two paravanes stowed on the quarterdeck, two heavy duty winches sited just abaft the after superstructure, and two davits on the extremity of each quarter. These davits were not unlike the more familiar torpedo davits fitted close to the 'tubes', and their presence on the quarters is a sure sign that the sweep gear is fitted. They are, in fact, provided in the Airfix *Hotspur* kit.

The need for this equipment became a contentious matter during the war, because on the one hand destroyers were seldom used for mine sweeping in practice, and on the other, the clutter on the quarter deck prevented more substantial depth charge arrangements from being fitted. In consequence most of the War Emergency classes were 'fitted for but not with' sweep gear.

ANTI-SUBMARINE WEAPONS

From the first world war, and right through the second world war, all destroyers (other than the old ships converted to Escorts) were fitted solely with depth charges for anti-submarine attack.

Ships involved in the Battle of the Atlantic, on the other hand, had

Ahead Throwing Weapons in the form of 'Hedgehog' and 'Squid' mortars.

The original depth charge equipment consisted of a 'trap' over the stern, and a depth charge thrower to port and starboard, fitted close to the after superstructure. In a standard attack 5 depth charges were delivered in a 'cross' pattern, three being dropped in sequence from the 'trap' and one each side from the throwers. After the attack, the throwers had to be re-loaded, but normally sufficient charges for at least two attacks were contained in rails leading to the stern 'trap'.

In the War Emergency destroyers (and in most others) the force of the attack was doubled to the '10 pattern' arrangement. This involved duplicating the stern rails and traps and doubling the number of throwers, the second stern rail being offset from the centre-line.

The number of charges available was increased by extending the twin rails and by fitting a ready use rack alongside each thrower. This stowage, which incorporated a simple winch, working on the parbuckle principle, allowed for rapid re-loading of the throwers. The '10 pattern' depth charge attack was something worth watching from the surface, particularly if the fuses had been set to explode 'shallow'. This caused the most spectacular upheavals of water and to have been on the receiving end of successive attacks must have been a fearful experience.

RADARS

One of the early radars fitted to the groups was a set whose aerial was installed in a cylindrical cover (sometimes called a 'lantern'), mounted either on a special lattice structure amidships, or alternatively, on a small platform projecting forward from the foremast at yard height. This was a 'Surface Warning Radar' as distinct from the Gunner Radar mounted above the range finder in the HA director. Here, a linkage from the director sight drive, coupled to the aerial array, caused the latter to elevate in conjunction with the director sights and the rangefinder. As the reliability of radar increased, the optical rangefinders came to be less and less used, although they were not finally abandoned as gunnery instruments until well after the war.

The warning radars were designed either for Air Warning or Surface Warning and towards the end of the war, most ships had both. The earliest surface sets were contained in the cylindrical tub or 'lantern' already described, but later came to be mounted on the foremast and took the form of the segment of a circle. Part 33 of the Airfix *Daring* kit, is the right shape, but is over scale and need only be 4 mm wide.

The Air Warning sets tended to be more complex in design and in 1:600 scale are best represented by a cross of plastic sprue.

Other electronic equipment included two types of direction

finders—a High Frequency and a Medium Frequency—and a special set (IFF) which automatically identified friendly aircraft. The MFDF projected forwards from the bridge superstructure, while the HFDF was mounted either at the top of foremast or alternatively on its own lattice mast on the after superstructure. The IFF set was usually on the foremast, and all are best modelled by simple plastic sprue struts.

BOATS AND CARLEY FLOATS

The arrangements of the boats was variable. Most ships had two 27 ft whalers, a 25 ft motor boat, and a 16 ft motor dinghy. They were stowed with a whaler to port and starboard at the break of the fo'c'sle, the motor cutter further aft on the starboard side, and the motor dinghy inboard to port. However, some later allocations only allowed for one whaler, in which case it was normally at the break of the fo'c'sle on the starboard side, balanced by the motor cutter to port.

In addition, many ships had a sailing dinghy stowed on the deck beneath the motor cutter, and using that boat's davits. Hence it could not normally be lowered unless the cutter was already in the water. Sometimes there was also a diminutive 10 ft dinghy, for the Side Party in harbour for general hull-painting and inspection purposes. Its small size allowed it to be stowed in an odd corner of the main deck, and launching was carried out by the torpedo davit.

The siting of Carley floats was even more variable; typical arrangements will be shown in the drawing appearing next month.

DAVITS

There were two types of davit in use in the Service during the war, if the heavy landing craft type are discounted, the modern Gravity Davits (which feature in the Devonshire kit) not being introduced until comparatively recently. Both the earlier patterns are available from existing Airfix destroyer kits.

The most common type takes the form of a swan neck in model form (because the falls are integral with the davit) and these always face outboard.

The davits are screwed outwards by jacks to launch the boat, and form a support for it in the inboard position, when the boat is constrained by diagonal girders. This type of davit was used in the Emergency classes for both the whaler and the 25 ft motor boat.

In later classes, the motor boat was carried in conventional Radial Davits, rotated by hand gearing. In the stowed position they were turned to face inboard, the boat being constrained by girders against a gripping spar set between the two. The spar had to be removed to allow the attitude of the davits to be reversed when the boat was prepared for lowering, complicating the procedure. For this reason Radial Davits were not used for the whaler, because it might be necessary to lower it in an emergency.

In both types the boat dropped under its own weight, once the davit heads were over the water, but no power hoisting arrangements were fitted, the recovery being effected by the ship's company manning the falls and running the boat up literally by 'manpower'. (In contrast, the modern Gravity Davits are power operated, with winch drums driven by either electric or hydraulic motors.)

In my model of HMS *Rocket*, I have arranged the 25 ft motor boat to be 'turned out' ready for lowering, while the ship flies her Pennant Number flags from the starboard yardarm. This is a typical state of affairs for a ship entering harbour to secure to a buoy. The motor boat carries the 'Buoy Jumpers'—ratings (usually of the fo'c'sle party) whose duty it is to take the cable from the ship and shackle it to the ring-bolt or similar device on the buoy.

MASTS

Before the war, most destroyers had quite tall pole masts in the fore and main positions between which the main roof radio aerials were suspended from yards crossing the topmasts.

On the foremast, in a lower position, a wide yard carried three or four signal halyards on each side. As the weight of gear aloft increased, tripod masts became fashionable; and at the same time, the main mast was much reduced in height, to give clearer arcs of fire to the close range AA weapons mounted abaft the funnel.

When more and more Radar and radio equipment came to be mounted on the foremast, even the tripod structures were insufficiently strong, and lattice masts took their place. Occasionally, the



Above: HMS *Wizard* post-war with the single small HA director, two single Bofors abaft the funnel with a twin Bofors mount amidships.

main mast was constructed from lattice girdering, too, particularly when it was required to support a direction finding aerial.

The ultimate lattice structures in destroyers featured in the 'Battle' class Radar Picket conversions, their enormous foremast spanning the complete width of the maindeck. Nowadays masts tend to be completely plated in, which combines strength and appearance with ease of construction.

INTERNAL ARRANGEMENTS

Internally, the complete group was very similar. Up to the 'R' class, the Wardroom was in the traditional position aft, but from then on it was built into the forward superstructure beneath the bridge where it remained up to and including the 'Darings'. This was to facilitate access to the bridge for the officers; in very rough weather the bridge was sometimes cut-off for days when the Wardroom was sited aft.

We need not concern ourselves with the detail of the ships below decks, but the main machinery compartments might be mentioned. All ships had two boiler rooms, one beneath the break of the fo'c'sle, and the second further aft, roughly beneath the forward torpedo tubes. The waste gases were trunked into the single funnel, which accounts for the 'bell' fore and aft at its foot. Abaft the boiler rooms came the engine room and gearing compartments.

It is often not realised that the gundeck immediately abaft the funnel, and the midship structure between the tubes, were positioned not so much to support guns as to contain the large ventilation trunkings supplying the machinery compartments below. The extent of the engine room/boiler room area can be seen by the absence of portholes in the ship's side.

UPPER DECK FITTINGS

Each gundeck had several ready-use ammunition lockers from which shell and cartridge were drawn at the commencement of an action. From then on, they were kept filled by a supply from the magazines and shell rooms below.

At one time ready use shells were stowed vertically around the 4.7 inch mountings, and they are included in the moulding of 'B' and 'X' gundeck in the Airfix *Cossack* kit. Here, to be strictly accurate, each shell should be given a touch of buff coloured paint, that being the distinguishing colour for HE projectiles.

Apart from the ready-use lockers there were numerous other lockers around the upper decks, positioned against the bulkheads of the superstructure units. There were also a large number of ventilators, supplying fresh air to, and taking exhaust air from, the various compartments within the ship. These units took the form of cylindrical or square-section projections from the decks and bulkheads and each had a water-tight flap which could be closed in case of damage. Electric fan motors delivered the air to trunkings throughout the ship.

Four sets of bollards were located along the deck edge of the upper decks, to port and starboard, generally associated with fairleads through which the berthing wires were led when the ship was alongside.

Each of the close range gundecks had a small portable davit, to supply boxed ammunition for the AA guns, and sometimes these was a small gun-crew's shelter where personnel could keep out of the weather when they were on watch, but not closed-up, at Action or Defence Stations.

The gunshields on the main armament gave protection to the key ratings in the gun's crew—Layer, Trainer, Breech-Worker and Sight-Setter—all of whom had positions on the revolving structure. The loading numbers on the other hand, continually moved between the ammunition supply position and the mounting, and were vulnerable

Continued on page 145

CLASS LIST: War Emergency Destroyers

Name	Pendant No	Disposal	Name	Pendant No	Disposal	Name	Pendant No	Disposal	Name	Pendant No	Disposal
Quilliam	G09	N	Saumarez	G12	S	Grenville	R97	C	Kempenfelt	R03	Y
Quadrant	G11	A	Savage	G20	S	Ulster	R83	C	Wager	R98	Y
Quail	G45	L	Scorpion	G72	N	Ulysses	R69	C	Wakeful	R59	C
Quality	G62	A	Scourge	G01	N	Undaunted	R53	C	Wessex	R78	SA
Queenborough	G70	A	Seraphs	G94	N	Undine	R42	C	Whelp	R37	SA
Quentin	G78	L	Shark	G03	N	Urania	R05	C	Whirlwind	R87	C
Quiberon	G81	A	Success	G26	N	Urchin	R99	C	Wizard	R72	C
Quickmatch	G92	A	Swift	G46	L	Ursa	R22	C	Wrangler	R48	SA
Rotherham	H09	I	Troubridge	R00	C	Hardy	R08	L	Myngs	R06	E
Racehorse	H11	S	Teazer	R23	C	Valentine	R17	CN	Zambesi	R66	S
Raider	H15	I	Tenacious	R45	C	Venus	R50	C	Zealous	R39	IS
Rapid	H32	C	Termagant	R89	C	Verulam	R28	C	Zebra	R81	S
Redoubt	H41	I	Terpsichore	R33	C	Vigilant	R93	C	Zenith	R95	E
Relentless	H85	C	Tumult	R11	C	Virago	R75	C	Zephyr	R19	S
Rocket	H92	C	Tuscan	R56	C	Vixen	R64	CN	Zest	R02	C
Roebuck	H95	C	Tyrian	R67	C	Volage	R41	C	Zodiac	R54	IS

Key: N: Netherlands; A: Australia; S: Scrapped; I: India; C: Converted to A/S Frigate; CN: Canada; Y: Yugoslavia; SA: South Africa; E: Egypt; IS: Israel; L: Lost.



The British Army '14-18

UNIFORMS AND REGIMENTS
DESCRIBED
BY DAVID NASH

Part 5: Machine Gun Corps and Tank Corps

THE Machine Gun Corps and Tank Corps owed their existence to the very nature of the Great War. The machine gun and the tank were fledgling weapons which grew to maturity during the conflict. The tank has evolved considerably over the last fifty years and, in retrospect, if the armoured fighting vehicles of World War 1 seem rather quaint and clumsy now, they proved their worth as a weapon of war and pointed the way for the future development of warfare.

The machine gun characterises the impersonal, mechanical slaughter of the Western Front. It was the defensive rock upon which most attacking waves broke, and in it is the key to the success of the German defensive tactics. In 1914, the machine gun was in service with the British Army on a scale of only two per infantry battalion. The Germans showed the British the true power of this weapon, and the British were not slow to take the hint. The quantity of machine guns was increased until there were sufficient in service to allow their being grouped into brigade companies.

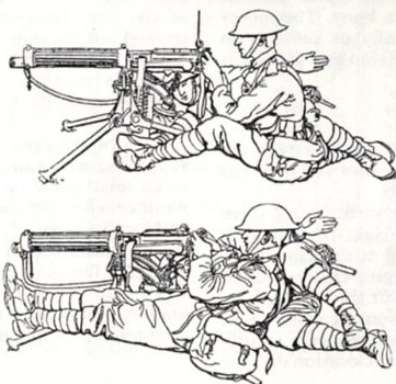
At this time, near chaos reigned in their organisation. The brigade companies consisted of machine gunners drawn from several different infantry battalions and were, in effect, like orphan children who belonged to no one. Their regimental pride—*esprit de corps*—had been taken from them and was replaced by nothing. To remedy these organisational, and other, defects, the Machine Gun Corps was formed on October 22, 1915.

The MGC was divided into three branches: Infantry, Cavalry and the Motor Machine Gun Service. The MGC Cavalry were formed into squadrons and they carried their equipment on pack horses. The Motor Machine Gun Service placed a great

reliance on the motor cycle and side car, and were, initially allotted to infantry divisions but later became army troops. The MGC Infantry were the most numerous of the new corps and were formed into companies, each attached to an infantry brigade, whose number it took as a designation. The company was divided into a HQ and four sections, each of two sub-sections of two machine guns. Each section carried its equipment in two limbered GS (General Service) wagons with a third to carry ammunition. The term detachment was used to describe the six men detailed to an individual gun. Later in the war, divisional companies were formed, and in early 1918, the four companies in each division were formed into divisional Machine Gun Battalions.

The mainstay of the corps was the Vickers .303 inch machine gun, which replaced the Maxims taken to France in 1914. The Vickers was a water cooled weapon, mounted on a tripod, with a maximum effective range of

Below: The normal firing position (sitting) for the Vickers machine gun.
Bottom: The low firing position for use in restricted cover.



2,800 yards. It could be used in a conventional way, firing at a sighted target, but during the war it came to be used increasingly in a way which was more akin to a field gun rather than an infantry weapon. The aim was calculated by artillery principles, and long barrages would 'beat up' a given zone of fire unseen by the machine gunners.

The corps was basically uniformed in clothing of the patterns and styles prevalent throughout the army, the companies being dressed as infantry, and the squadrons as cavalry. The brass shoulder titles were the initials MGC, sometimes surmounting C for cavalry or I for infantry. The corps cap badge consisted of crossed machine gun barrels surmounted by a crown. The companies which later became the 9th, 15th, 51st, and 52nd Battalions (and are thus identified as belonging to Scottish divisions) all, at various times wore the Tam o' shanter cap. The equipment varied from unit to unit. Sometimes it was made of leather, but more frequently of webbing. Corporals and sergeants did not have the normal pouches and rifle but were armed with a revolver which, together with an ammunition pouch, was carried on the belt.

The Heavy Branch of the MGC was formed on February 16, 1916, specially to operate the new tanks then being built, and on November 20, 1917, was redesignated the Tank Corps. The first tank had been produced in September 1915 and the crews were trained in great secrecy, at Elvenden in Suffolk. They were first committed to combat on September 15, 1916, on the Somme, but they were not an unqualified success—primarily, their supporters argued, because of the unsuitable terrain over which the operation had been conducted, and the insufficient numbers engaged. Nonetheless, the tanks had a quite shattering effect upon the German morale. Committed in quantity over a less difficult ground at Cambrai in 1917, the tanks virtually won a decisive victory in a few hours, a victory that was thrown away because of insufficient and delayed support.

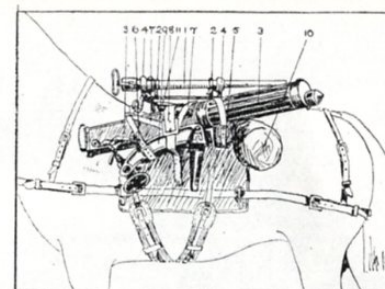
The basic tactical unit of the Tank Corps was the battalion divided into three companies each of four sections, containing five (later four) tanks. The tanks themselves were the Marks I to V and Medium A Whippets, about which much has already been written in the columns of this magazine and in recent books and Profiles, etc.

The uniform of the tank troops

reflected their unusual role; their constant fight against authority and the *élan* of the youngest branch of the British Army, characteristics which were also to be found in the RFC. Most items of clothing were of normal army (infantry) issue, but specialised equipment and garments were in use. In the early days of the corps, a brown leather helmet was worn by tank crews. Its cardinal fault was that from a distance, in silhouette, it was so similar to the German steel trench helmet that it had to be abandoned. The head taken from a World War 2 Airfix German, trimmed by the ears, gives a good impression of the type of headdress. An unpopular steel and chain mail visor was supposed to be worn to protect the eyes from 'splash' inside the tanks caused by the impact of bullets on the hull.

Sleeveless leather jerkins were much favoured by tank crews. Although strictly against regulations, puttees were often dispensed with, presumably because of heat generated by the open engine inside the vehicle. Officers favoured an unauthorised combination of old regimentals and Tank Corps regulations. Thus it is quite in order to place Tank Corps badges on a Scottish officer's doublet, or even on a cavalry officer's tunic which still retains the shoulder chains. Tank Corps badges consisted of a tank silhouette upon a wreath surmounted by a crown with scrolls at top and bottom, bearing the words 'TANK CORPS'. This badge was worn from the formation of the corps in 1917 but prior to this, the MGC badge was in use. Officers wore a small white tank silhouette on their right upper arms. Fighting equipment consisted of a belt with revolver and ammunition pouch, often made of leather, small pack and respirator. The battalion colours were frequently worn by officers on their shoulder straps and on steel helmets which were worn after the withdrawal of the leather type mentioned earlier.

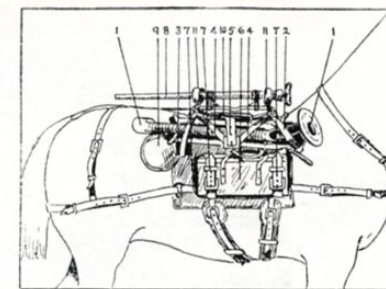
There are numerous figures in the Airfix range suitable for adaptation to Tank Corps crews. For example, the officer in the Bloodhound kit, with his blouse details filed down and with a tunic bottom built up from plastic putty, makes an admirable officer (without puttees) guiding a tank. With his collar and tie filed away you have an 'other rank' (also without puttees). There is also a duffel-coated figure in the Civilians set who needs only a head with peaked cap and his coat collar cut down to make a good tank officer wearing a 'British Warm'—



CAVALRY-GUN PACK HORSE

NEAR FIRE

1. Square barrel in case, resting in bracket of pack saddle.
2. Straps of square barrel case buckled to the rail supporting the two angles of the pack saddle.
3. Chain in the gun hanger.
4. Bracket bolted to extension piece of pack saddle.
5. Rear suspending pad of gun hanger.
6. Front suspending pad of gun hanger.
7. Yoking of gun hanger.
8. Gun rest strap latched through the "U" of the barrel and engaged with the triangular buckle of the Yoking attachment.
9. Groundrod of tripod attached to the gun.
10. Kneeling suspended from rear arch of the pack saddle.
11. Shoulder, suspended between the front and rear arches of the pack saddle.



CAVALRY-GUN PACK HORSE

OFF FIRE

1. Tripod (without crossbar) in tripod hanger.
2. Front suspending strap of tripod hanger.
3. Rear suspending pad on tripod hanger.
4. Yoking attachment of tripod hanger.
5. Detachable strap of tripod hanger brought through the "U" of the barrel and engaged with the triangular buckle of the Yoking attachment.
6. Ammunition box in "dangling box, ammunition in belt cavity."
7. Strapping, forming the "dangling box, ammunition, in belt cavity."
8. Square barrel in case, resting in brackets of pack saddle, with its straps buckled round the rail connecting the two angles of the pack saddle.
9. Kneeling suspended from rear arch of the pack saddle.
10. Shoulder suspended between the front and rear arches of the pack saddle.
11. Bracket bolted to extension piece of the pack saddle.

Above: Cavalry Machine Gun pack horse showing how the complete gun is carried dismantled. A cavalry machine gun detachment also had two ammunition pack horses which carried ammunition, tools, and condensers. **Left:** Types of emplacement for Vickers machine guns (All from Machine Gun Training Manual, Imperial War Museum). **Bottom of page:** Model of machine gun and team as described here.

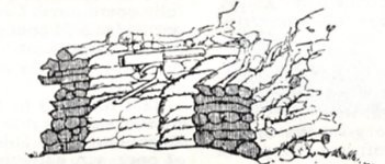
again without puttees. The Civil War Artillery men with heads replaced and with modified tunics make excellent crewmen, particularly the men with spikes who can be adjusting the tracks. These are just a few of the many possibilities.

Finally this month a typical MGC crew and Vickers gun is shown in model form. The crew of the machine gun model are all part of Airfix's British 1914 set, the helmets being taken from 8th Army figures. Since the Vickers was fired with both hands on the grips and the thumb on the 'trigger', the arms of the 'Number 1' must be adjusted. This I usually do by bending the arms under pressure or heat.

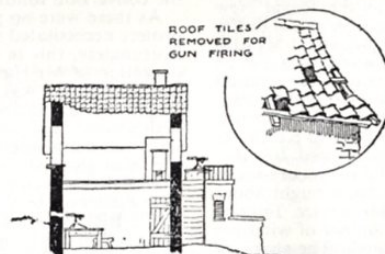
The gun is based on the machine gun provided, a piece of Biro refill being fitted over the existing barrel to give the correct width for the water jacket. The rear of the weapon was built up with thin cardboard which was also used for the ammunition belt. Strictly speaking, only Numbers 1 and 2 were in close proximity to the gun when firing in action, but all four other crew members were at hand to help if required. I detailed all the figures with packs, formation badges, etc., as outlined in previous articles. Note that in the World War 1 period a circular, rather than a square, water can was used. I made this from a 3 mm slice of thick spruce.



GUN EMPLACEMENT
"TENT" DUG OUT
OF HEAP OF ROOTS
WITH INSIDE WALLS
OF SAND BAGS



STACK OF WOOD USED AS
GUN EMPLACEMENT



ROOF TILES
REMOVED FOR
GUN FIRING



SECTION OF BUILDING
SHOWING GUNS MOUNTED
AT REAR AND IN CELLAR



SKETCH OF BUILDING





Making Ansett's 'Islander'

COLOURFUL FLYING BOAT CONVERSION DESCRIBED BY DENNIS H. BRIGNELL

FOUR hundred and twenty miles east-north-east of Sydney in the Tasman Sea, lies the holiday resort of Lord Howe Island. As the island has no airstrip, vacationers and island residents rely on the flying boat service from Rose Bay, Sydney, to provide their sole link with mainland Australia, there being no regular shipping service. Ansett Flying Boat Services, a division of Airlines of New South Wales, conducts the year-round service, with Government subsidy, using two S.25 Short Sandringhams. Flying boats have been in use on this essential service since 1945. Initially operated by Qantas, using Catalinas, thence by Trans Oceanic Airways with converted Sunderlands, the service has been in the hands of the Ansett Group since 1953.

In 1963, Sandringham VH-BRE was blown ashore from her moorings in the lagoon at Lord Howe Island. Although not extensively damaged it became necessary to declare her a total write-off, due to the virtual impossibility of effecting the necessary repairs on the relatively isolated island. Subsequently, the aircraft was stripped of all instrumentation, engines and interior fittings, towed out to sea and scuttled.

The problem of finding a replacement aircraft was, fortunately, not as difficult as one might have anticipated, as the Royal New Zealand Air Force had been operating Sunderlands on patrol duties for some years. Early in 1964, a Mark V Sunderland, serial ML814, was acquired from the RNZAF. This aircraft is believed to have been in New Zealand hands since 1951. Given Australian Registration VH-BRF, she was flown across the Tasman Sea to Sydney. In a conversion lasting nine months, working seven days a week, she was stripped down to the bare hull and completely re-built to Sandringham configuration. On re-commissioning she was named *Islander*. Unlike her 'sister ship' the *Beachcomber* (VH-BRC) she incorporates several variations on the normal Shorts' conversion, brought about by the operator's vast experience in this particular service. Interior layout has been altered, as has the location and number of windows fitted and the number of original portholes retained. The shape of the nose, due to the original Sunderland turret location, is also considerably different, being not as pleasing in appearance as on the original S.25.

At present the 420 mile flight to Lord Howe takes 3 hours 20 minutes. The aircraft now return to Rose Bay after a stay at the island of about an hour. Flight schedules are governed by the state of the tides in the island's lagoon, so that to the uninformed, the varying arrival and departure times are somewhat unusual.

Lord Howe Island is part of New South Wales, and the State Government has, for some years, been aware of the eventual need for an airstrip, bearing in mind that the two existing Sandringhams must be nearing the end of their time as passenger aircraft. Recent newspaper articles make mention of at least two types of aircraft as possible replacements for the flying boats. One is the F.27 Fokker Friendship, of which there are already 41 on the Australian Register. The second type mentioned is the recently introduced Short Skyvan. Three of these STOL aircraft are already in use here, and perhaps to some people, it would be 'poetic justice' to have another Short aircraft replace the Sandringham after such long and faithful service.

Anticipating probable future developments, Airlines of New South Wales recently announced that a 'feasibility study' was under way as to the possibility of converting their two Sandringhams to water bombers. With the recent development of the amphibious Canadair CL-215 water bomber in mind, preliminary investigations have indicated that an S.25 water bomber would be quite practical,

in fact, it would have a larger water-drop capacity than the CL-215. So it could be that Sydney's Eastern Suburbs residents will be hearing the old familiar four-engine Pratt and Whitney sound for some years to come.

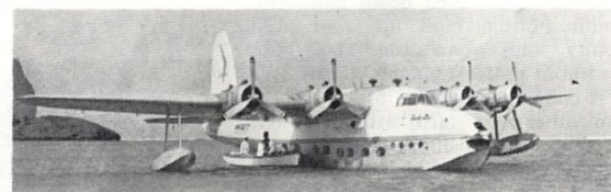
NOTES ON THE CONVERSION

Ansett Flying Boat Services' Sandringham VH-BRF is believed to be one of the only three remaining Sunderland-type aircraft still fully operational. Conversion of the Airfix Sunderland Mk III to this particular S.25 configuration is a lengthy, though relatively straightforward, operation. I consider it to be well within the scope of anyone with previous experience at plastic modelling and you should certainly not be discouraged by the physical size of the model.

This being my first attempt at a kit conversion, I found that I was forever running into trouble through not sequencing my conversion stages correctly. This was brought about by trying to do two things at once, viz, gathering the necessary photographic reference on the actual aircraft and at the same time, getting on with the kit conversion. This problem should not befall any modeller who undertakes the conversion following this article.

As there were no plans of this particular aircraft in existence, the project necessitated many visits to the Rose Bay Flying Boat Base. Fortunately, this is less than a mile from my home. With the co-operation of Mr Harry Woods, Hangar Foreman for Ansett Flying Boat Services, I was able to accumulate a total of about 100 photographs of various details of the aircraft. These photographs, together with several old Short's general arrangement drawings (dated 1945), were the main references for the conversion. General information was also gleaned from Mr M. J. F. Bowyer's *Sunderland Profile* (AIRFIX magazine, April 1966) as well as from William Green's *War Planes of the Second World War, Volume V, Flying Boats*.

VH-BRF, being a former Mk V Sunderland, is powered by four Pratt & Whitney Series 1830-90D Twin Waspradial engines. But for the shape of the exhaust pipes, these engines are identical in appearance to the engines depicted on the Airfix Catalina. The obvious method of converting the Sunderland's Pegasus engines is thus to use two Catalina sets, but as this seemed to me to be both too expensive and wasteful, I elected to re-work the four Pegasus engines using photographs of the actual Twin Wasps and a previously completed Airfix Catalina for reference. This proved to be the longest and most difficult part of the conversion. The re-shaping of nose and tail assemblies together with the removal of bomb racks and dorsal turret and the installation of the various ports and windows should present no problems for the average modeller.



Above: VH-BRC, Beachcomber, Islander's 'semi' sister is a true Sandringham with streamlined nose. She also differs in other details like window spacing, but colour scheme is the same.

An interesting point which came to light during my research on the S.25 concerns the propellers. In striving for accuracy, it was found to be necessary to turn the Pegasus blades over on to the other hand, as well as shortening and re-shaping them to appear similar to the Catalina's blades. Locally they are referred to as 'Paddle' type blades. This would appear to be a small error in the Sunderland kit, as several Ansett employees, including the Foreman Mr Woods, all of whom have worked on Pegasus engines in the past, seem to recall that both types of engine use similar handed propellers.

Followers of Alan W. Hall's excellent series of articles should be in a very favourable position to undertake this conversion. Having completed Mr Hall's radial-engined Lancaster (AIRFIX magazine, October 1968), you would then have a 'propellerless' Sunderland kit, ready for use. In addition, the Halifax propellers mentioned in the Lancaster conversion would be quite suitable for the Sandringham, provided the blades were turned over on to the other hand. For those modellers who may have a well stocked 'spares' box, it is worth mentioning that the propellers and engine cowlings from either the Short Stirling or Flying Fortress, appear to be suitable for use on the Sandringham, in that the cowlings are close to the required shape, as are the propeller bosses and blades.

The only remaining parts to be found for the Sandringham are a second DF loop, identical to the one provided in the kit, and an astrodome. As with the rest of the aerial array, my second DF loop was made from scrap plastic and a radio panel bulb of suitable dimension was used for the astrodome. Should such a bulb be unobtainable, there are about six different aircraft in the Airfix range having an astrodome which would suffice.

Interior detailing should also be considered. Without going 'over-board' on this phase of the conversion, it is worthwhile to at least fit an upper deck to your model, best made from plastic card and projecting aft from the underside of the existing flight deck. This prevents the casual observer from seeing upper deck windows when viewing through lower deck openings and vice versa. My model also features a lower deck level and one transverse bulkhead, but these are not readily evident from outside the hull.

The beaching gear employed on VH-BRF is very similar to that depicted in the Airfix kit. The colour scheme for the beaching gear is grey, with red and green on the respective buffer-fenders and struts-braces port and starboard. Tyres are flat black.

Humbrol Customizing Body Putty was used for the nose and tail re-shaping and an old transparent plastic school set-square was cut up for use as windows. Unwanted parts from the kit were used to fill in openings as required. Fine grade 'wet and dry' paper was best for fining down the rivet detail. It should be remembered that VH-BRF is entirely flush-riveted.

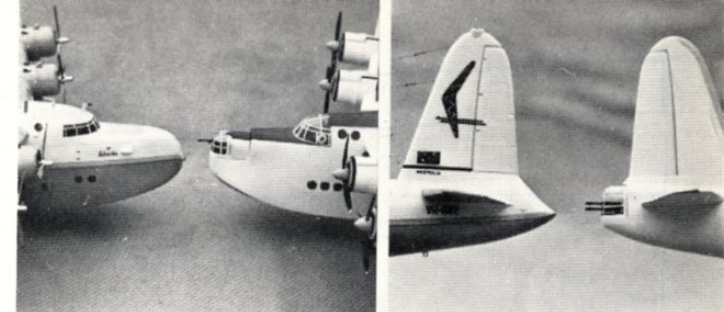
Conversion details

STAGE 1 Concentrate first on the fuselage halves. Numbered from the bow, lower deck portholes Nos 3, 4, 5, 6 and 7 as well as the aftermost pair on either side should be plugged with sprue and sanded off flush with the hull. This will leave four lower deck portholes on the port side and five on the starboard side; all upper deck portholes should be retained. Plug up both bomb doors using either the kit parts or scrap plastic cut to shape. Use body putty to fill in any cracks around the former openings and then sand off smooth. Carve up part No 41 and use to fill in the dorsal turret opening as well as the D/F loop and aerial mast holes.

Working from the plan, mark out all window openings in pencil, taking note of their position in relation to the existing portholes and following the rivet detail



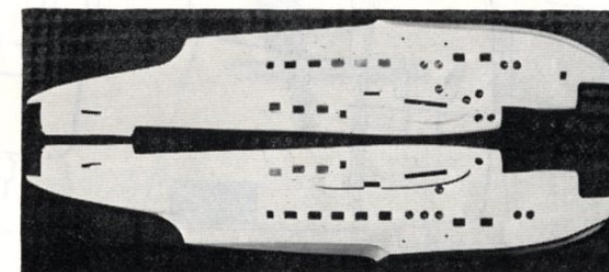
Above: Starboard side view of the fuselage before addition of the wings. Wings are not added until all other work is complete.



Above: Contrast in end treatment. Islander is on the left in each of these two views with a Sunderland for comparison.

lines. Drill a small hole within each window marking and complete the openings with a knife. Note that all window openings have rounded corners. This causes some problems when it comes to fitting the transparencies into place so that the individual modeller may find it easier to cut the openings perfectly rectangular, and worry about the rounded corners during the painting stage. Check to see that all window openings line up, when viewed through the hull, except for the single small window in the port bow.

After cutting out the 25 window transparencies (20 large, 5 small) and selecting 16 porthole transparencies, carefully glue them into position. As with the ports, the windows should be tapered, and fitted from the inside. Laying Sellotape over all openings may ensure that transparencies set flush with the outside surface of the hull. When glue has set hard, cut around all openings carefully, with a sharp knife and peel off the Sellotape leaving the transparencies covered for protection against scratches and also as an aid to facilitate painting.



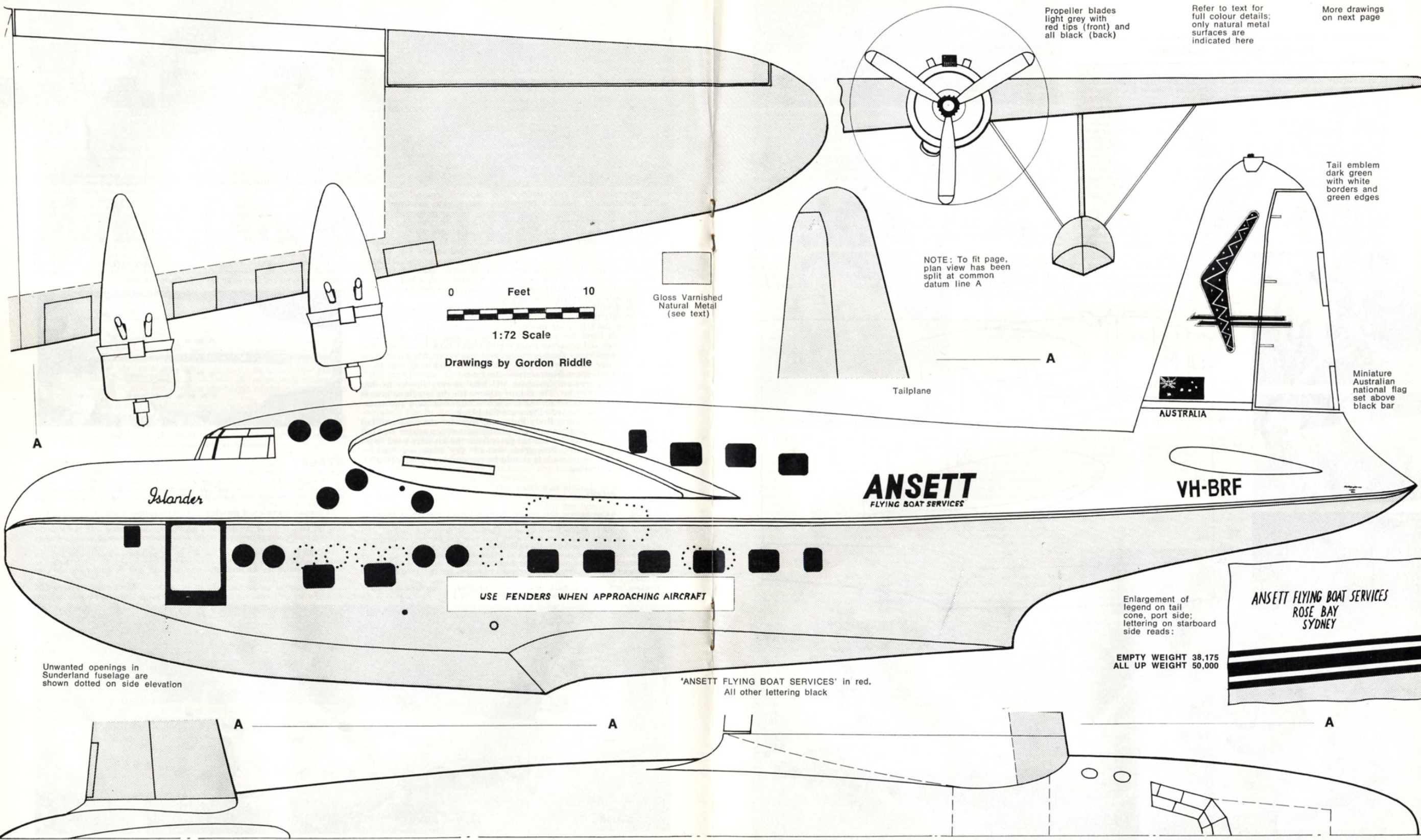
Above: Fuselage halves after Stage 1, with unwanted apertures blocked off and new windows fitted.

STAGE 2 Assemble and paint the Flight Deck and glue to a 7-inch length of plastic card as described previously (see illustration). The upper deck assembly can be supported by small triangular plastic tabs glued at intervals along the inside of the hull, port and starboard; this assembly should then be glued to the port hull half, making sure that it sets perfectly horizontal so as to be mated to the starboard half later on.

To prepare the bow and stern sections for re-shaping, parts 38, 39 and 50 (for the bow) and parts 60, 61 and 47 (for the stern) should be assembled and glued into the port hull half, as shown in the illustrations. Check with the plan for accurate positioning of these two infills, so as to allow for subsequent use of body putty.

The two portholes located on the top of the hull forward of the fin are best fitted from the outside, after the hull halves have been joined, but if it is desired to achieve an inside fit, the necessary openings must now be drilled and the port

Continued on page 124
Scale drawings on next page



0 Feet 10
1:72 Scale

Drawings by Gordon Riddle

Gloss Varnished
Natural Metal
(see text)

NOTE: To fit page,
plan view has been
split at common
datum line A

Tailplane

Propeller blades
light grey with
red tips (front) and
all black (back)

Refer to text for
full colour details;
only natural metal
surfaces are
indicated here

More drawings
on next page

Tail emblem
dark green
with white
borders and
green edges

Miniature
Australian
national flag
set above
black bar

USE FENDERS WHEN APPROACHING AIRCRAFT

'ANSETT FLYING BOAT SERVICES' in red.
All other lettering black

Enlargement of
legend on tail
cone, port side;
lettering on starboard
side reads:

EMPTY WEIGHT 38,175
ALL UP WEIGHT 50,000

ANSETT FLYING BOAT SERVICES
ROSE BAY
SYDNEY

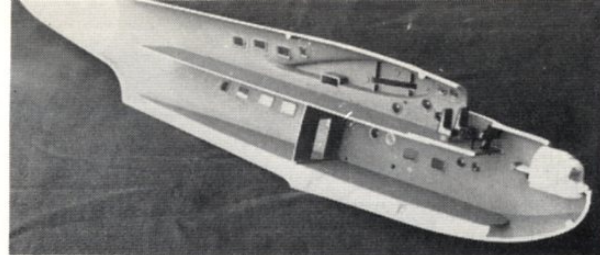
Unwanted openings in
Sunderland fuselage are
shown dotted on side elevation

Making 'Islander'—continued

transparencies fitted to one hull half. Note that these two portholes are smaller than the others and are slightly recessed. Depending on the type of astrodome to be fitted, the hatch opening should also now be drilled out. If desired, interior painting should now be completed and the hull halves glued together and held with Sellotape and/or rubber bands. Flat mid-grey is a suitable colour for the interior surfaces.

After the hull halves have set, apply body putty to the bow and stern sections. Build up the shapes with liberal application of the putty using the plan to arrive at the desired final appearance. Before the putty sets and preliminary sanding is carried out, riddle the new putty areas with pinholes. This facilitates drying and hardening and seems to enable the putty to 'hold on' firmly.

STAGE 3 Before final shaping of the new bow and stern sections, proceed with the wing and tail assemblies. All openings in wing leading edges should be filled in and sanded smooth. If an inside fit is desired for the underwing landing lights, the necessary holes should be drilled and small porthole transparencies fitted (with silver paint on the inside), before the wing halves are joined. For the navigation light fitting on top of the fin, a slot should be cut into the fin and a small block of scrap plastic cut to shape and glued into the slot; final shaping can then be carried out, as per the plan (see illustration). The three slots in the leading edge of the rudder can be cut with a hacksaw blade and sanded smooth. For the wingtip lights, cut notches out and glue in small blocks of transparent



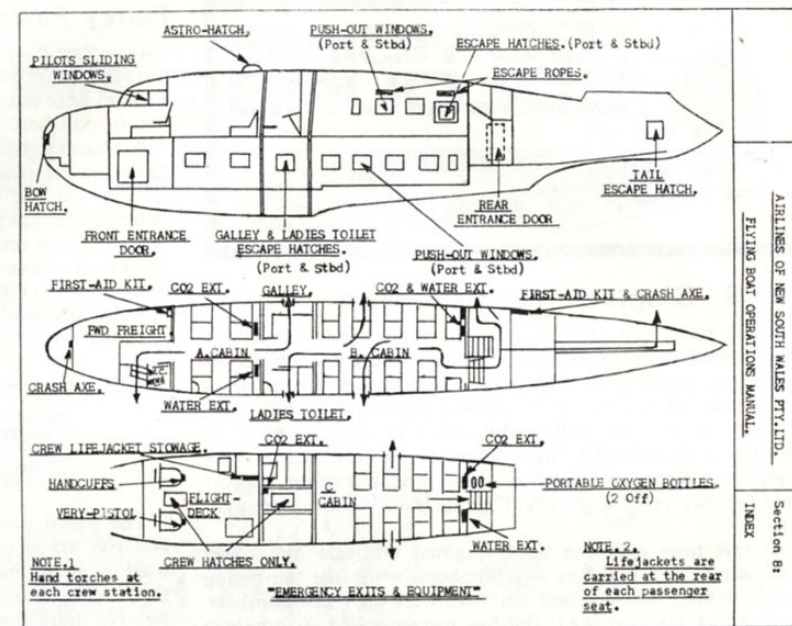
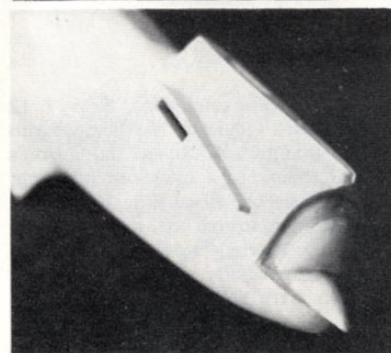
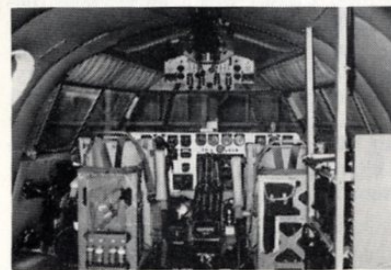
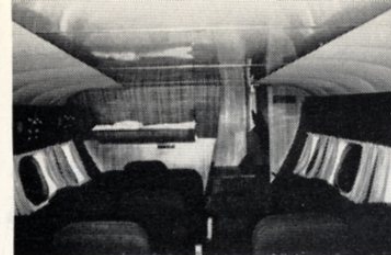
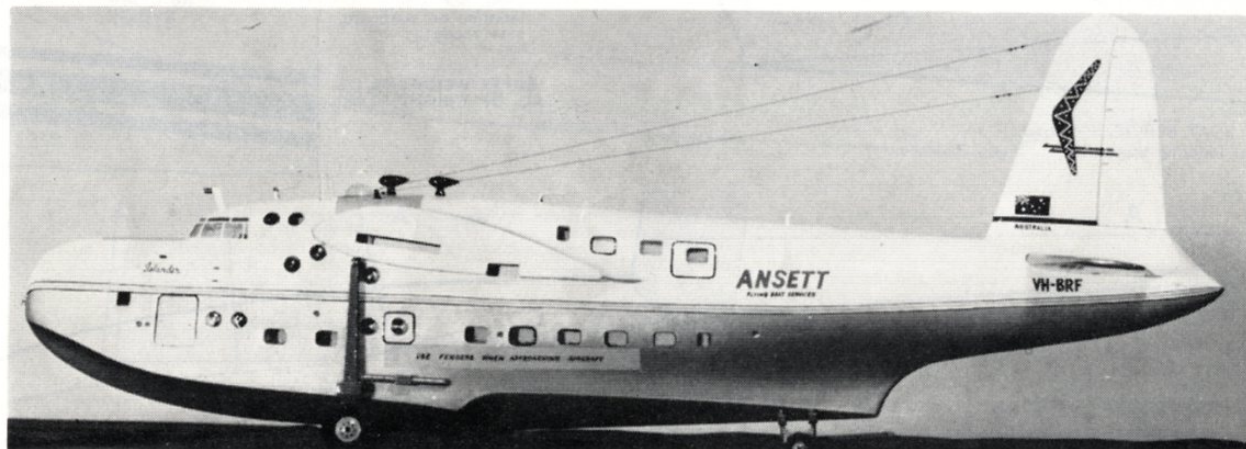
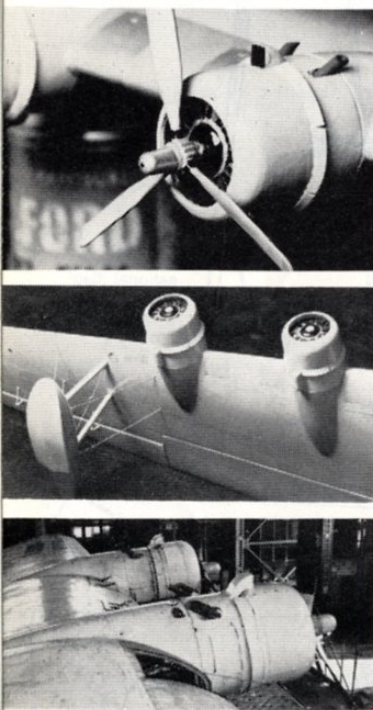
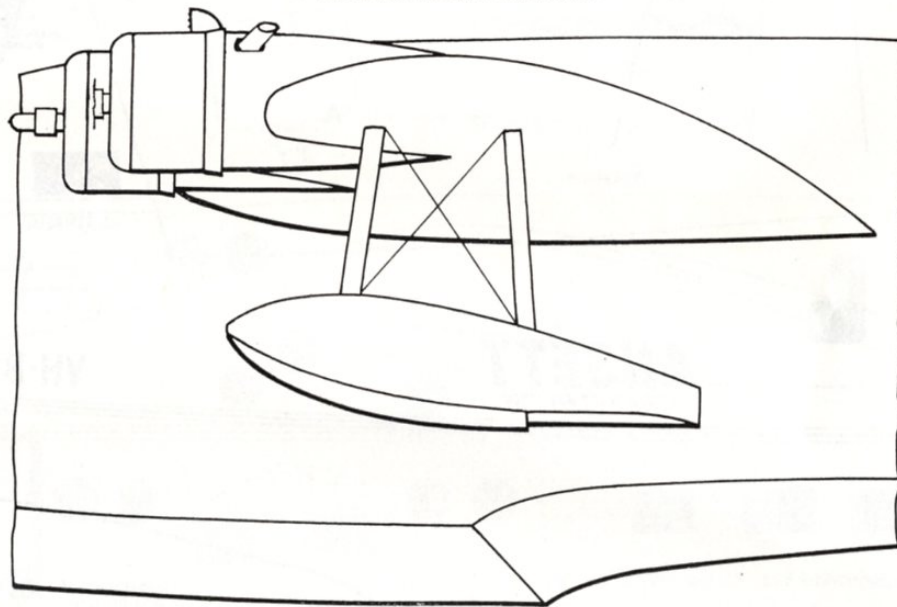
Above: Working on the interior. Decks and partitions are added from plastic card to 'break up' light inside.

sprue. When sanded back to the normal wingtip shape and varnished over, the authentic opaque appearance is achieved.

If the floats are to be rigged, the various cable attachment points should be marked in pencil and the holes made with a fine needle held with pliers and heated to glowing. A gas cigarette lighter is ideal for this operation. This same method can be employed to make various other small openings, as required. For example, the main aerial attachment holes, engine exhaust pipes, etc. Alternatively use a fine drill.

VH-BRF, like most Sunderlands and their variants, has external aileron control arms and cables. If these are to be fitted to the model it will be necessary to glue the ailerons into their normal position. The control arms can be made from sprue and the cables from short lengths of fuse wire, held in position with paint spots. However this should not be attempted until the wings are completed and painted.

Below: Centre-section drawing to show cowling shape and float rigging, etc. Use in conjunction with main drawings on previous page. 1:72 scale—full-size for model. (Drawing by Gordon Riddle). Left, top to bottom: Completed engine, prop, and cowling modification on model. Float and control wire rigging on model. View of engines on actual aircraft. Note flush-riveting gives smooth appearance. Foot of page: Port side of fuselage after completion.



Above: A good idea of interior layout of Islander is given in this page from Ansett's operations manual. This should be useful for anyone who contemplates adding seats or basic interior bulkheads, etc. Left, top to bottom: A view aft in C Cabin, ie, the one at flight-deck level. The flight-deck itself showing pilot and co-pilot seats and controls. The method of using unwanted parts to build up the tail cone (as described on page 121).

STAGE 4 Having filled in the needle holes, complete the shaping of the bow and stern to detail. Some of the plastic around the upper part of the former rear turret opening will need to be pared off with a knife before sanding to the new flowing shape. The putty work to the bow section should extend aft to the vicinity of the small window on the port side. Here, fill in the small opening in the lower bow front and sand off smooth. Referring to the plan, remove unwanted rivet detail from the area of the port side door, forward end, so as to depict the enlarged cargo door. Small triangular plastic tabs should be glued to the after end of the tailplane roots and sanded to shape, as per the plan.

Carefully position the cockpit canopy and glue into place. Mask off the proposed window area with Sellotape and apply body putty to the upper canopy so as to hide the rear joint completely. When sanded off, this area should have the appearance of being a continuation of the fuselage. The recesses for the mooring cleats can best be done with a small, hand-held drill bit. Note that there are four on the port side and three to starboard. Also with the aid of a drill, a $\frac{1}{8}$ inch hole should be drilled in the leading edge of the port wing root, close to the hull (see plan).

The two air intakes and two exhaust vents for the bow, as well as the bow mooring bollard and stern towing ring must now be hand carved and glued into position. All the projections on top of the hull are best left until the painting is near completed. With all transparencies still covered with Sellotape, the hull should now be cleaned up with a pencil rubber, brushed off and given a coat of flat white.

STAGE 5 If the existing Pegasus engines are to be re-worked, four oil cooler intakes, four air intakes and eight exhaust pipes need to be hand carved from sprue. Cut 1/10 inch from the rear of each engine cowling, and the remains of the raised cooling flaps must be sanded down. Fill in the remains of the old exhaust slot and cut off the key piece from the top of each nacelle. Taper the edges around each nacelle front so that the now shortened cowlings will fit flush. Cut a shallow groove right around each nacelle, 3/10 inch back from the front edge and parallel to it. The underwing section of this groove is later utilised during the painting stage. Mark and cut out the two exhaust pipe oval-shaped holes in each nacelle, and fit the exhaust pipes as per the plan.

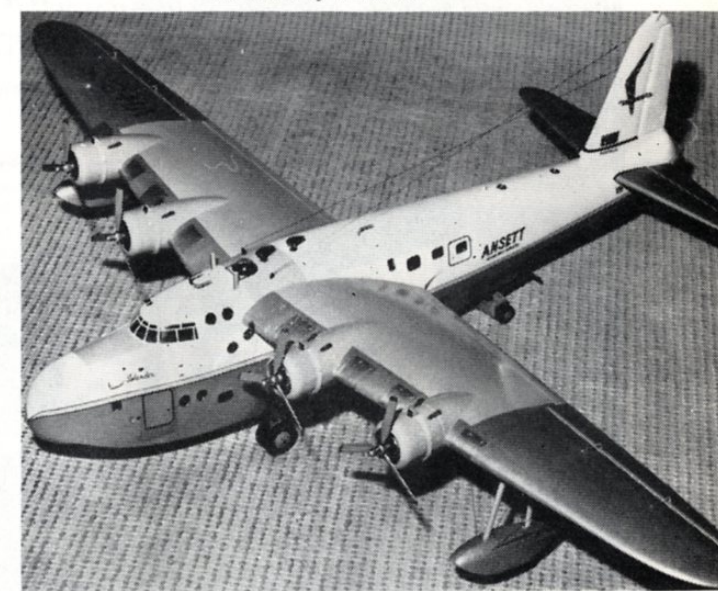
The openings at the front of each engine must be reamed out to $\frac{1}{8}$ inch diameter. The inside areas of each engine, between the cylinders, should be reamed out as much as possible towards the outside surface of the cowling. To simulate the larger oil pipes, short lengths of metal pin are fitted between each of the cylinders, nine to each engine, radiating out from the centre. The raised circular area around each propeller shaft should be built up with putty to a dome shape. Here again, as mentioned previously, the use of a Catalina engine for reference in this re-work is most desirable, although the oil pipe layout as depicted on the Catalina is not quite accurate, as in fact the oil pipes run in all directions, anything but symmetrically (see photograph).

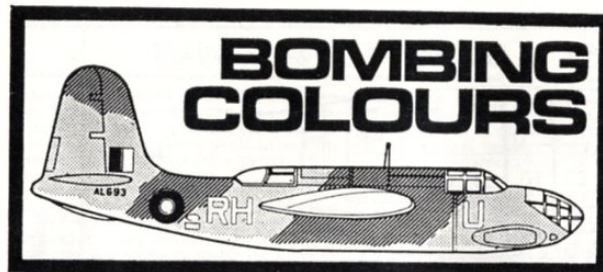
If Catalina-type propellers are not available, the best method of re-shaping the Pegasus units is to first mount them on inch long shafts made from sprue. Break off all the blades and re-shape the bosses to exact Catalina replicas. The blades should be replaced with new ones made from sprue or the existing ones must be broadened to the new 'paddle' shape and re-positioned as described previously. From shaft centre to blade tip should measure exactly 1 inch. Before joining

engines to nacelles, drill a hole in the front centre of each nacelle, to accept the long propeller shafts. The engine fronts are best painted before fitting: flat brown Humbrol 26 is used on cylinders and backgrounds, with gloss black on oil lines and dome centres. The domes should have a silver border. After joining engines to nacelles, air intakes and oil cooler intakes can be fitted and the join line covered with the new cooling flap collar. This latter piece can be made from strips of plastic card, pre-bent to shape. Note that there are six sections of collar on each engine.

Continued on page 141

Below: The completed model of Islander in all its glory. This superb conversion is, in fact, the first attempt at really ambitious modelling by the author of this article!





Part 8: Single-engined Bombers

IN the early and mid-twenties, marking regulations made no distinction between fighters and bombers; the differences concerned whether an aeroplane had a day flying or night flying role. However, no successful night fighter had then reached service, so both RAF schemes were applied to bombers and only the day scheme to fighters. These were aluminium pigmented dope or paints giving a silver appearance for day roles and NIVO giving a dull green for night roles.

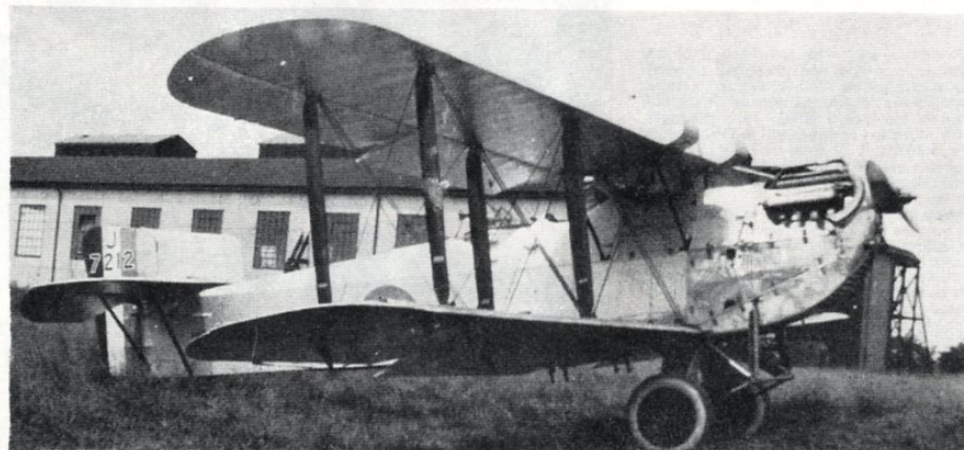
At this time only the single-engined bombers had speed sufficient to be classed as day bombers, while the lumbering weight-lifting, twin-engined bombers were all night bombers, so in effect the two RAF finishes were applied to bombers according to their configuration. In this section the day bomber element is surveyed.

Avro Aldershot

With a span only an inch less than that of a Vimy, the Aldershot, classed as a medium bomber, was an extremely large aircraft for a single-engined aeroplane. The fabric covering the metal structure was ADP doped giving a silver appearance. To match this, the ply-covered forward-fuselage decking and metal cowling was similarly painted, but such was the glare to the crew, that black was soon substituted on this area.

Two prototypes, J6852 and J6853, were followed by 15 production aircraft, J6942-6956, from which were drawn the aircraft to equip the only Aldershot squadron, No 99, established on a twin-flight basis at Bircham Newton, 1924-26.

In squadron service individual identity, apart from the small display of their serial numbers, was by large white numerals on the engine cowling, examples being as shown in the drawing plus '4' J6956 and '8' J6944.



Left: Fairey Fawn of No 12 Sqn showing the circular squadron motif on the tail fin. Above: Avro Aldershot in standard factory finish before allocation to 99 Sqn. Great size of this single-engined machine is apparent by contrast with the men.

Fairey Fawn

It was envisaged that the Fawn would replace the DH 9A but, for financial reasons, it was outlived by its predecessor. Fawns were finished conventionally, silver overall with a highly polished, natural metal, engine cowling.

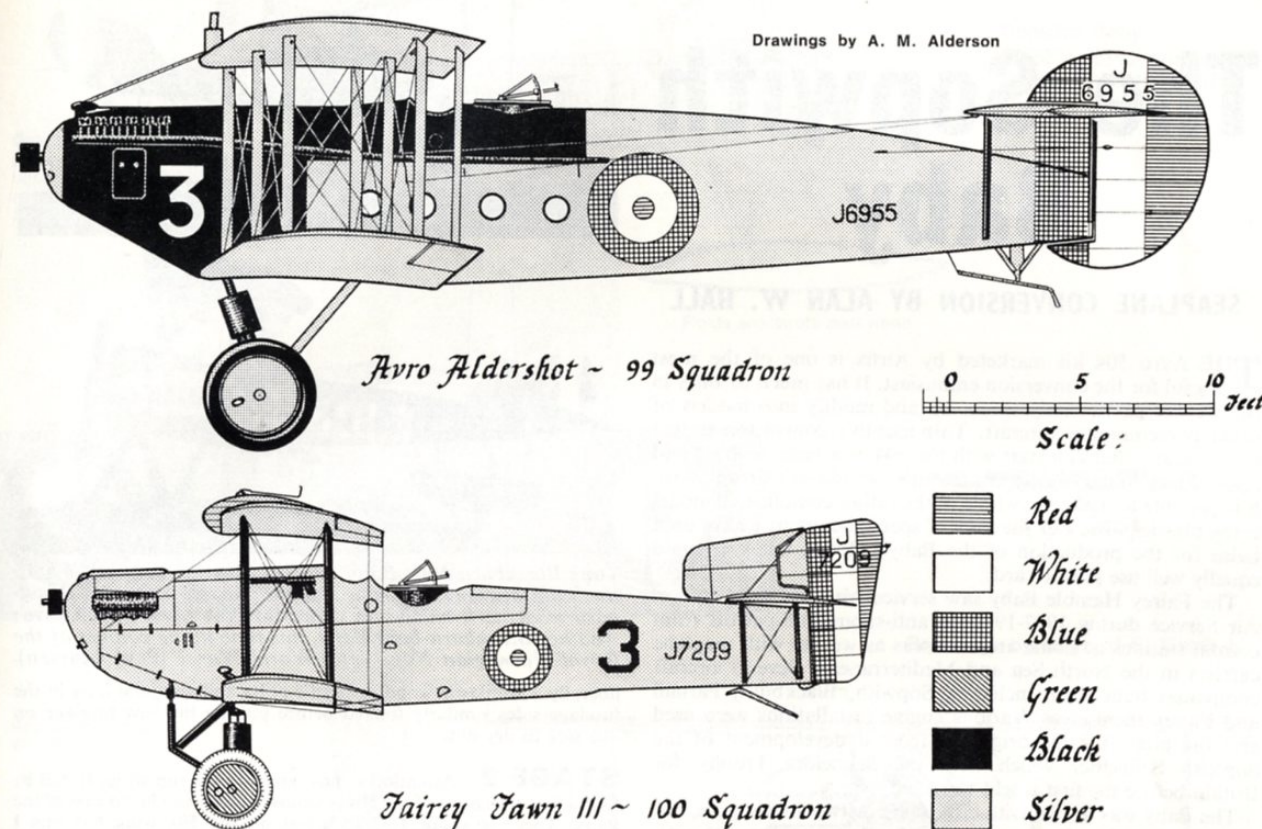
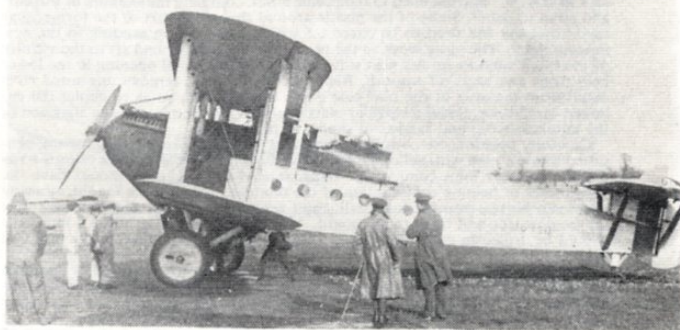
A characteristic of Fairey aircraft was a visible constructor's number placed in small stencilling adjacent to the serial number on the rear fuselage. In service it was sometimes painted out, but invariably it was marked on initial delivery. Official Fawn serial numbers were all in the 'J' series and all Fairey numbers were prefixed 'F'—they still are and now reach up to F9731 for Wasp HAS1 XV636 built at the Hayes Division of Westland Helicopters, once Fairey Aviation works. Matching J/F numbers for Fawns were:

Serial Number	Fairey Number
J6907	F403
J6908-6909	F404-405
J6990-6991	F415-416
J7182-7231	F481-530
J7768-7779	F783-794
J7978-7985	F865-872

The Fawn equipped three first-line squadrons, Nos 11, 12 and 100, all on a three-flight basis. Of these, No 12 squadron used a small motif in the manner of No 39 Squadron's DH 9As shown in part 7 (October), as a squadron marking; but No 100 Squadron, shortly before discarding its Fawns, set a style for home-based bomber squadrons, that of marking its squadron number on the fuselage side.

This month's instalment is of necessity shorter than usual, but the Aldershot and Fawn were relatively obscure types best considered separately.

Bruce Robertson



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Chinese Boxer Infantry, 1900
Highland Clansman, 1745
Spanish Death Regiment, 1808

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The Sopwith Baby

SEAPLANE CONVERSION BY ALAN W. HALL

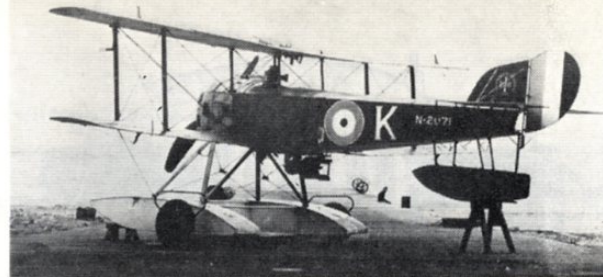
THE Avro 504 kit marketed by Airfix is one of the most useful for the conversion enthusiast. It has much to offer in the way of parts, ready to cut up and modify into models of other contemporary aircraft. This month's conversion is just one of many that can start with the 504 as a basis with an end result which looks so different that it's a modeller's dream. Also it is possible to make the whole of the rather complicated model using plastic parts. For the sake of speed, however, I have used balsa for the production of the Baby's floats, but you could equally well use plastic card.

The Fairey Hamble Baby saw service with the Royal Naval Air Service during 1917-1918 on anti-submarine patrols from coastal stations at home and overseas as well as with seaplane carriers in the North Sea and Mediterranean. Several aircraft companies built them including Sopwith, Blackburn, Parnall and Fairey themselves. Various engine installations were used and the aircraft came originally from a development of the Sopwith Schneider which held the Schneider Trophy for Britain before the first world war.

The Baby was armed with either one or two Lewis guns, but other versions had Ranken darts or Le Prieur rockets for anti-Zeppelin attacks instead of a gun. Most had been withdrawn from operational service by the end of the war but a few remained for training purposes and more were sold to foreign governments. Eight went to Canada, nine to France and one each to Japan, the Netherlands and the US Navy. Others were supplied to the Norwegian forces as can be seen from the accompanying photographs.

The suggestion that the Baby could be produced from an Avro 504 came out of one of those inevitable discussions that arise when modellers get together and was as a direct result of a suggestion from reader F. Stringer, an ardent pre-war aircraft modeller. I chose for the subject aircraft an illustration found in Kenneth Munson's *Bombers 1914-1918* in the pocket encyclopaedia series published by Blandford. This is in fact a Blackburn-built Baby and served at the RNAS coastal station, Felixstowe, late in 1917. It has an attractive colour scheme featuring a red and white chequered cowl and white floats. Other reference can be found in the Harleyford publication *Fighter Aircraft of the 1914-1918 War* where on page 59 there is a 1:72 scale plan, historical details and several interesting photographs giving the development of the aircraft. Owen Thetford's *British Naval Aircraft since 1912* also devotes two pages to the aircraft, and the three-view drawing depicts a Sopwith-built version.

STAGE 1 The Avro 504 fuselage halves are joined together and allowed to set. When this has been done the rudder is removed and then three cuts are made across the fuselage and the unwanted parts removed. I used the rear cockpit of the 504, the nose where the joint with the engine cowl occurs and the rear part of the fuselage. The three parts were stuck together (using the top line of the fuselage as a datum) and allowed to dry thoroughly. It will be found that a perfect fit can be obtained, with the exception of the under-fuselage line, provided that care is taken to mark the cuts to be made on the fuselage correctly. The under-fuselage section is subsequently filled

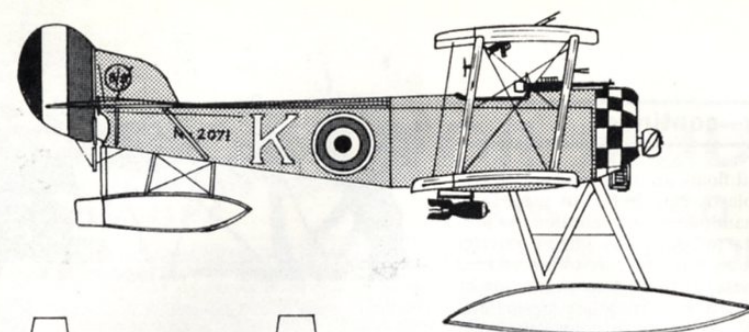
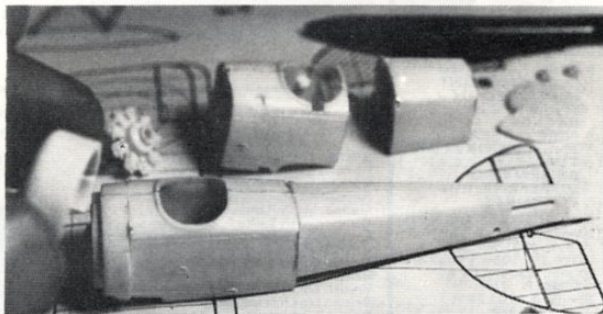


Top: Blackburn-built Baby which forms the subject of both the scale drawing opposite and the model. Note the Blackburn trademark on the fin (Imperial War Museum). **Above:** Another Blackburn-built Baby, this time in the colours of the Royal Norwegian Navy after World War I (Paul Leaman).

liberally with plastic wood or plastic putty and any joint lines in the fuselage sides similarly treated before putting the new fuselage on one side to dry out.

STAGE 2 Attention is now given to the top wing. It will be found that the chord of the 504 is almost exactly similar to that of the Baby. There is about 1/32 inch less on the 504 wing but this I regarded as admissible at the scale we are working. The wing is cut 1 1/8 inch from the tip at both ends and the centre section is also reduced to a width of 1/8 inch. Wing tips are reshaped according to the plan with a knife and sandpaper. The slot in the trailing edge of the centre section is also reshaped and a rectangular aperture is cut out by drilling holes at the four corners of the shape followed by cleaning up operations with a file and knife. Provided that the cuts to reduce the wing span have been made accurately, the wing can now be re-cemented together, and by placing matchsticks under the

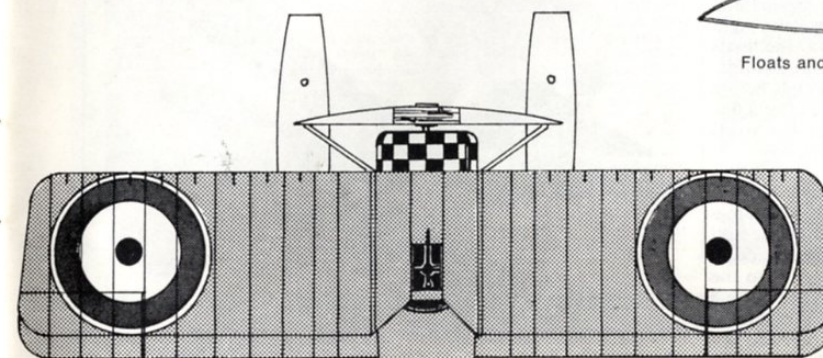
Below: The fuselage cut into parts and placed over the plan to check for size and fit (Stage 1). **Bottom:** Adding the seat after completing the fuselage. Note lower wing centre section has been re-positioned.



Colours:
Humbrol HB15 on
upper surfaces
Humbrol HB16 on
lower surfaces

Floats and struts matt white

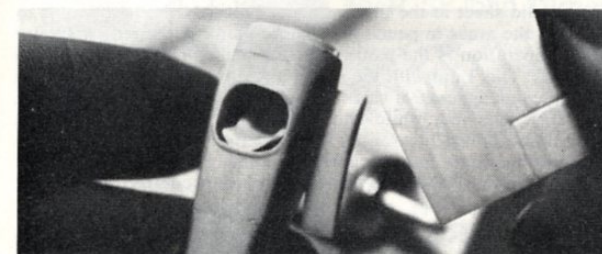
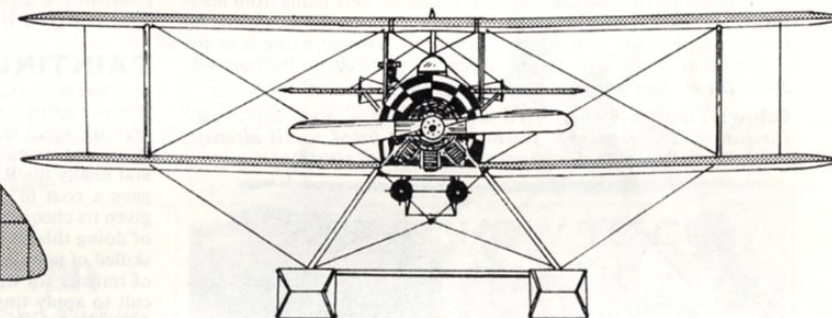
Sopwith Baby
(N2071, Blackburn-built)
RNAS, Felixstowe, 1917



0 Feet 10
1:72 Scale

Drawings by Richard E. Gardner

Red-white checks
on cowl



Above: Testing the modified lower wings for fit against the re-positioned centre section.

tips and a weight in the centre, the right degree of dihedral can be obtained whilst the wing is drying out. A small spot of body filler will remove the locating holes in the top of the wing and the undersurface where the struts join. These are cleaned up when the rest of the wing is finished.

STAGE 3 The fuselage must be left overnight, after which the plastic wood filling should now be ready to accept rubbing down. This will take a long time and care must be exercised as the fuselage is less than three inches long and anyone with large fingers will find that it is difficult to hold the fuselage and apply 'wet and dry' paper at the same time. A coating of clear dope and talcum powder will fill the rather coarse grain of the plastic filler and also give a final polish to the surface. When complete the lower wing centre section must be

refitted to the fuselage. I tried doing this with a saw but found that the slot to be cut was too small and therefore reverted to a knife. Care must be taken in the operation as an accurate joint must be made. The lower wing is cut across the chord so that a centre section of 1/8 inch is left. This is stuck in place and any joint lines filled with plastic wood to rebuild the under fuselage shape. Whilst the filler is drying out the cockpit seat can be inserted, the engine painted and the cowl cut away at its lower extremities to fit the shape shown in the plan. Two other operations to be completed at this time are the head rest behind the cockpit which is made from scrap sprue and the re-shaping of the outer lower wing panels. These are done in exactly the same way as the top wings but only the rear locating holes for the inter-wing struts are filled.

STAGE 4 The tail unit now comes in for attention. The Baby's fin and rudder are made from plastic card simply cut from a fairly thick sheet of the material and sandpapered into aerofoil section. The tailplane which is the same span for both the Baby and the 504 can be cut and shaped from the original until it fits the plan. Here again care must be taken as it is very small and any false cut will take a lot of repair if it is not to show on the finished model. To complete this stage of the operations the lower wings and tail unit can be fitted and the fuselage given its final polish. I did not fit the top wings until later since I painted the fuselage top coaming and fitted the machine gun and windscreen before final completion. Holes to locate the inter-wing and fuselage to upper wing struts can however be made.

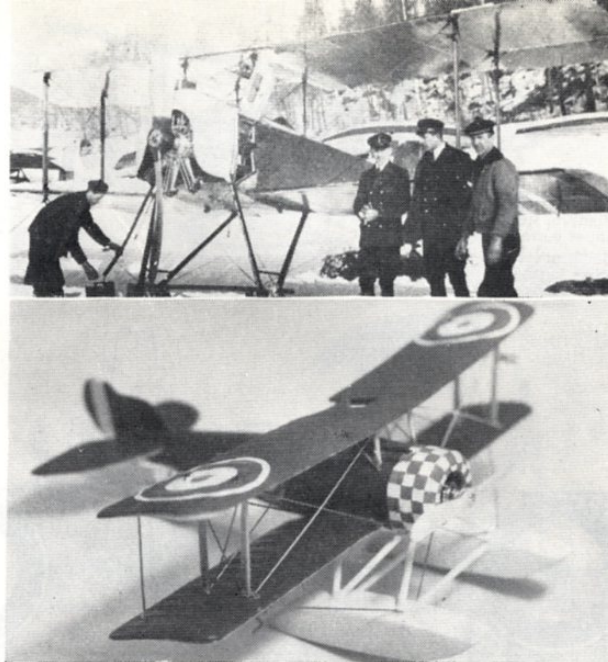
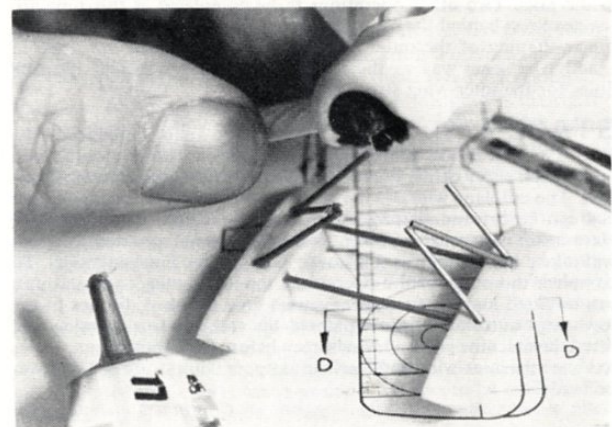
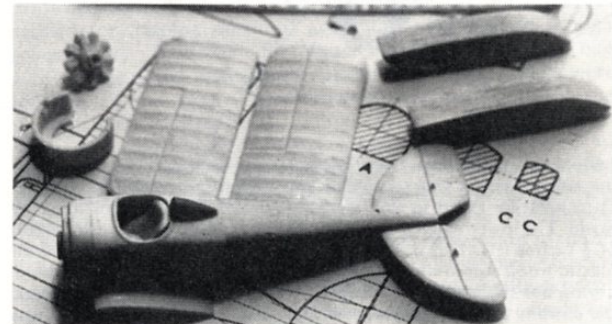
Continued on next page

Sopwith Baby—continued

STAGE 5 The main and tail floats are now made. You can construct these very simply from plastic card but I cut them from balsa, rubbed down with very fine sandpaper, and repeated the process after I had given a liberal coat of dope and talcum powder filling. The square section of the floats must be carefully preserved when papering. Struts to join the floats to the fuselage were made by heat stretching scrap sprue. Thick sections of sprue are needed and several attempts will probably have to be made before the right thickness can be achieved. Locating holes are drilled into the floats and the underside of the fuselage before they can be fixed in position. The tail float is treated in exactly the same manner though here a water rudder is made from plastic card and stuck in place after a fine groove to take it has been made in the rear of the float. The struts between the tailplane and the fuselage can be added now.

STAGE 6 Final constructional details are now added before painting. The Lewis gun, which I took from a spare left over from a Handley-Page 0/400 kit, was mounted on a tiny piece of sprue and fixed into a locating hole previously made on the starboard side of the fuselage. The engine and cowl which were fitted prior to the addition of the floats need a propeller, and here I had to cheat a little as the 504 prop is canted in the opposite direction to that of the Baby. As I could not find a suitable alternative in the spares box and because the prop is so small that any attempt to twist the blades in the opposite direction would have led to disaster I left this item as it was, only cutting off the tips and reshaping them to the Baby's smaller diameter. The interplane struts were made from those in the 504 kit suitably cut down. Centre-section struts were made from heat-treated sprue. On the port side front strut a pitot head was made by bending a piece of sprue whilst still slightly hot and fixing it to the strut with an extra large dab of cement. A foot-rest on the port side aft of the cockpit was also made from thinly stretched sprue.

Below: The floats completed and the engine and cowl ready for fitting. The head-rest fairing was not fitted to all aircraft.
Bottom: Positioning floats and struts.



Top: Baby in the snow. Another view of a Norwegian Navy machine, this time fitted with skis instead of floats. Cowl appears to be white or burnished metal and national markings are white/red/white chord-wise bands. Can anyone confirm the colours and finish? (Paul Leaman photo). **Above:** The completed model of the Baby painted as in the scale drawing.

PAINTING Standard Humbrol authentic colours can be used for this aircraft though with the HB15 'RFC Green' I feel that this is slightly too gloss and I therefore added a small amount of matting agent supplied by the same company. Matt white for the floats and struts was applied first, then the clear doped linen (HB16) and finally the RFC Green. At the same time as painting the floats I gave a coat of matt white to the engine cowl which was later given its chequered red pattern. The individual will find his own way of doing this. It is difficult to advise painting direct as only the most skilled of us will be able to do it. I do however advise against the use of transfer for this operation. It would I am sure be even more difficult to apply tiny red squares to the surface let alone cut them out from a solid sheet in the first instance. Probably the best way is to mark out the areas in pencil first before painting the red. A similar difficult operation is the painting of the maker's symbol on the fin and floats. This I did with the use of a mapping pen and Indian ink giving the floats a coat of clear varnish after the operation had been completed. The red, white and blue tail stripes were painted on rather than applied by transfer. Do not forget to paint the centre section of the under fuselage area immediately aft of the engine and $\frac{1}{4}$ inch of the tips of the prop blades silver before completing painting operations.

TRANSFERS When the paint is dry the upper wing can be put in place and a small piece of acetate sheet used to simulate the cockpit windscreen. Rigging made from finely stretched sprue is also applied at this stage. Transfers can then be added and for these I used the Micro Decal sheet No 72-6. Both the upper and lower wing markings and the fuselage roundels are covered exactly by this manufacturer and they are the right colour and stick very well. The fuselage code 'K' came from a Letraset sheet 215, but you may have a transfer in the correct style. I also found the aircraft serial N-2079 easier to paint on rather than hunt for transfers to do the job. The operation was done on a piece of blank slide transfer and then applied to the model. Finally two small bombs from my spares box were painted white and fixed under the fuselage to complete the model.

The Society of Model Aeronautical Engineers (SMAE) is holding a Northern Area Model Flying Rally at RAF Lindholme, near Doncaster, Yorks (A614 road between Bawtry and Thorne) on Sunday October 26, 1969. Admission 2s 6d, under 14s free, car parking free. All are welcome and the contests (for prizes) start at 10 a.m. Free-flight, radio control, and control line events are included.

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fighting colours

RAF fighter camouflage and markings 1937-1969

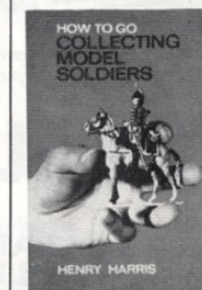


By Michael J. F. Bowyer

Michael J. F. Bowyer, well-known contributor to 'Airfix Magazine', details the development and changes in camouflage and markings of all Royal Air Force fighter types from 1937-1969 and lists the serial number allocations of every RAF fighter ever flown in that period. He records comprehensively how RAF colours altered over the years, against the background of contemporary events. Each chapter is illustrated with detailed line drawings depicting specific aircraft in typical markings of the period, with 139 individual photographs, there are exhaustive appendices giving precise data on all RAF fighter types since 1937. 192 pages, 8 $\frac{1}{2}$ " x 5 $\frac{1}{2}$ ", case bound. (35s net)

HOW TO GO COLLECTING MODEL SOLDIERS

By Henry Harris



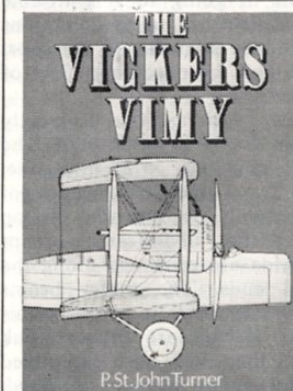
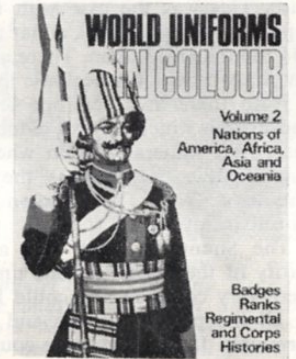
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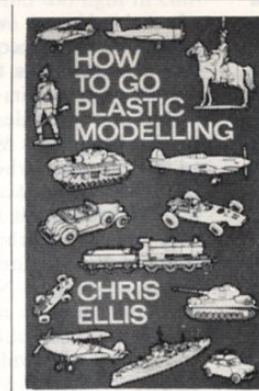
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By Chris Ellis

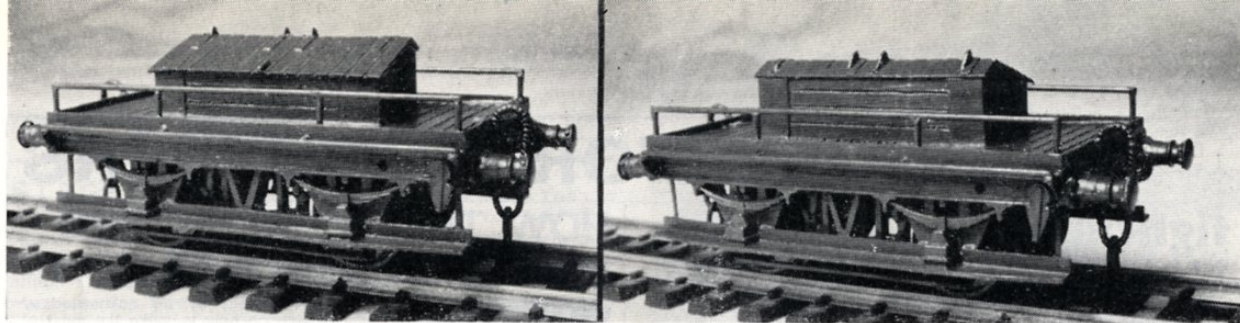
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Two views of the completed model, a simple but effective conversion for any railway layout. Lettering is still to be added and handrails painted white.

Building a Shunter's Truck

ALL the wagon conversion articles of recent months using the Airfix Mineral Wagon kit have involved lengthening the underframe and wheelbase. This was the case with the old type petrol wagon, the Conflat and the 24½ ton mineral wagon. There are very few wagons with a wheelbase less than 9 ft so there are therefore very few conversions which involve reduction of the Airfix Mineral Wagon wheelbase. One notable exception is the GWR Shunter's Truck. This wagon had a wheelbase of only 7 ft.

The Shunter's Truck was a peculiarity of the GWR. At one time they were very common and could be seen in all the principal yards and freight terminals. In use they were coupled to the shunting locomotive—invariably a 57XX Class Pannier tank—and their main purpose appeared to be to give mobility to the shunter who, when the truck was on the move, could often be seen clinging to the side. For this purpose full length footboards and handrails were provided and these were prominent features of the design. Although these wagons were very common, their use was limited to the bigger yards such as Old Oak Common, Swindon or Cardiff, the sort of place that most modellers could not hope to have room for. So it would not be true to say no GWR layout is complete without one. Most of the smaller GWR branch lines and country stations so popular with modellers would in reality have no use for one. However, these shunter's trucks provide a touch of GWR atmosphere, they are attractive and eye catching to look at and they take up so very little room that there is every excuse for adding one to your stock.

Once again the Airfix Mineral Wagon kit provides the basis for this conversion. To begin, take the two solebars, parts 8 and 9, and cut an 8 mm length section from the centre



BY **NORMAN SIMMONS**

of each. If you want to fit metal wheels—and I recommend them for this conversion as there is very little weight otherwise in the finished model—drill out the axle holes in the back of the axleguards with a No 41 drill to take the Peco wheel bearings and fit the bearings in place at this stage. Cut off the four small projections on the face of the solebars which in the Mineral Wagon form the base of the side door hinges. Now take the floor or underframe as it is referred to in the Airfix instruction sheet (part 7), and reduce the width by 1 mm each side to 27 mm. If 3-link couplings are required the locating bushes for the Airfix couplings should be removed at this stage. Cut and remove an 8 mm section from the centre and cement the two halves of the floor together. Now cement the solebars in place, at the same time locating the wheels in the axle holes. Place the unit on to a flat surface and check that all wheels are touching the ground and are level and square. Leave to one side to allow the cement to set thoroughly.

The brake gear is easy to do. There are no long brake levers on this model

as it is equipped with the GWR type of short lever, but there is a 'V' hanger in the centre, so cut the levers from Airfix parts 10 and 11 and trim the remaining 'V' hanger into shape using craft knife and file. The brake assemblies, parts 5 and 6, should be cut into half as shown at the foot of page 534 of the August issue and an 8 mm long section should be removed from the base of each assembly and the levers should be shortened to enable them to fit into the restricted wheelbase. Cement the brake assemblies and the 'V' hangers in place and check that the brake shoes line up with the wheels. These wagons were vacuum braked and vacuum cylinders were fitted under the floor but there seems little point in going to this trouble since in ordinary running conditions so little can be seen due to the short wheelbase and the obscuring effect of the footboards.

The body, such as it is, is largely made from 20 thou plastic card. The floor, 55.5 mm long x 27 mm wide, scored at 2 mm intervals to represent planking, should be cemented on top of the Airfix underframe. Strips 2.5 mm wide are cemented along the sides and ends. The buffer beams should be cemented in place at this stage and, if you are fitting 3-link couplings, they are best assembled before the buffer beams are fixed. Small triangular pieces of 20 thou plastic card approximately 3 mm x 2 mm should be cemented to make platforms above the tips of the buffer beams which extend at either side of the body. The buffer beam tips should be shaped as shown in the drawing. The tool box is mounted centrally on the floor and is a simple plastic card construction job built up with the aid of liquid cement. The sides, ends and lid are scored to represent planking. Note that corner plates are fitted and these should be cut from 10 thou card

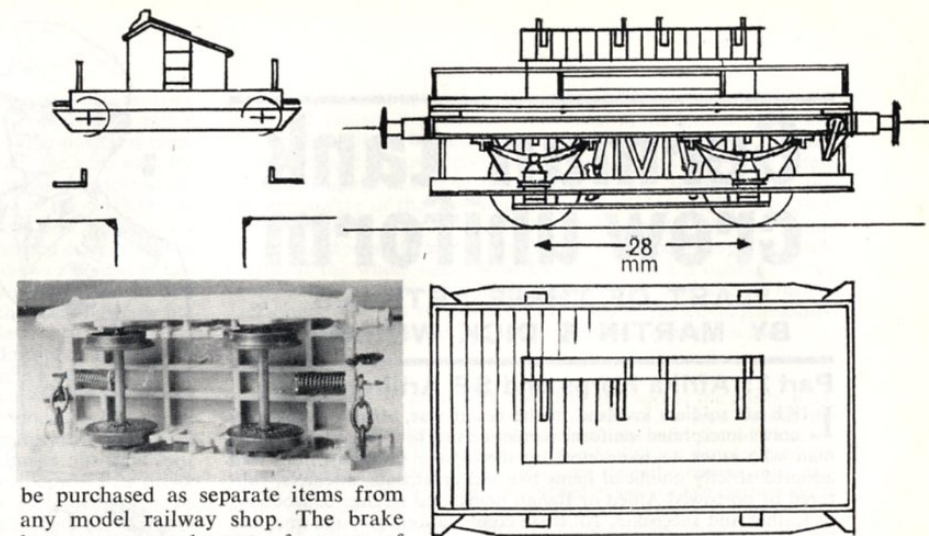
which material can also be used for the hinges and lid stops.

The footboards can be cut and assembled from 20 thou plastic card. They are 'L' shaped, measuring approximately 4 mm wide and 2 mm high and they should be cut to fit round the axleboxes. 20 thou square strips of plastic card form supports at the ends but the main strength comes from cementing the footboards to the axleguards and axleboxes. Tie bars cut as thin strips from plastic card should be cemented between the axleguards at each side.

The handrails were thought to be a problem at first. The pillars supporting the top handrail are much taller than any 4 mm scale handrail knobs I know to be generally available. I decided to try some of Slater's recently introduced plastic rodding as reviewed in the June issue. This is available in three sizes: 30, 40 and 50 thou diameter and in dead straight lengths of 12 inches. They can be obtained from Jones Bros of Chiswick. The smallest size was chosen and although it must be admitted it is oversize for 4 mm handrails, it does not look too unreasonable in the finished state.

The handrails were constructed by first drilling holes to take the pillars. These were cut oversize and trimmed to the exact height after they had been cemented into the holes. Small drops of polystyrene cement were placed with the tip of a pin on the top of each pillar and the handrail was placed into position. Before the cement had time to set, liquid cement was brushed on to each join to smooth out the cement drops and make a thorough bond. They were checked whilst the cement was still drying to ensure that they were straight and level. After leaving severely alone overnight they were found to be surprisingly strong and resistant to reasonable handling. I can certainly recommend this method and Slater's plastic rodding, which is beautiful material to work with and ideal for this sort of job. Gone are the days of stretching plastic sprue over a candle flame which could never produce such small diameter rodding straight and of constant thickness over any worthwhile length. I wonder if Mr Slater could produce some slightly thinner rodding? I'm sure it would be practicable if it were possible to make.

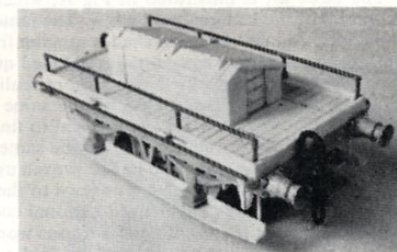
Vacuum pipes, brake levers and buffers are required to complete the assembly. I had a spare pair of brake pipes left over from previous kits but if you are not so fortunate they can



be purchased as separate items from any model railway shop. The brake levers were made out of scraps of plastic card, the disc at the end of the lever being produced with the aid of a leather punch. There is a type with a revolving head which produces different diameter holes and this is available quite cheaply from chain stores. The main purpose of the punch is, of course, to punch holes in leather but it can be used on plastic card and the discs that are produced as a result of the hole punching can be prised out of the punch. I find this tool comes in very handy for modelling purposes.

The buffers are a bit of a problem. The ones in the Airfix Mineral Wagon kit really will not do as they are too small in diameter and too light in construction. As it can be imagined, the Shunter's Truck spends its life bouncing against other wagon buffers and something rather substantial is required. I had a set of cast metal GWR buffers which I obtained several years ago and these were produced by Kenline I believe. They have exactly the right type of base but the head is not really large enough. In case you have difficulty finding anything like these, I would suggest using a set of locomotive buffers which can come either from a 'cannibalised' Airfix kit or can be bought at model shops.

On the subject of buffers, I must admit I have had trouble with the heads coming off my wagons fitted with plastic buffers. The more slender varieties such as are used on the Mineral Wagon are rather vulnerable and metal buffers which can be substituted are probably worth the expense. This does put up the price of a completed wagon but if this is a mitigating factor, a compromise solution might be to have a set of metal buffers standing by which only need to be used to replace the plastic buffers if and when an accident happens.



The two pictures above show the completed model before painting. Note the realistic addition of chain link scale couplings. Scale drawings are full-size for the model. Very small disc-type brake lever should be noted at the end of the solebar.

To return to the Shunter's Truck, all that is now required to complete the model is an overall coat of Humbrol GWR wagon grey. The handrails and the brake levers should be picked out with white. The letters GW and the running number appeared in white on the solebars and the name of the yard to which they were attached appeared on either side of the tool box.



Recent production Harriers now on delivery have a revised de-icing/rain dispersal equipment bulge at the base of the windscreen. This modification, seen here needs adding to the new Airfix Harrier kit. Note also the camera port in the port side of the nose only, not both sides as in the kit (Roger Levy photo).

German tank crew uniform

LAST OF THREE ARTICLES
BY MARTIN & DICK WINDROW

Part 3: Afrika Korps and SP Artillery

LIKE all soldiers involved in the desert war, *Afrika Korps* tank crews interpreted uniform regulations rather loosely. For every man who stuck to issue clothing there were probably four who adopted strictly unofficial items like old greatcoats, sweaters, captured or borrowed Allied or Italian items, and strange concoctions of leather and sheepskin. All these combinations give the imaginative modeller plenty of scope.

The basic kit is illustrated in Fig A, which shows a *Hauptmann* (Captain) of the 15th or 21st Pz Div. The famous *Afrika Korps* field-cap appeared in a variety of shades ranging from pale *café au lait* to darkish tan. The thin cotton material faded quickly under the desert sun, and modellers will achieve a more realistic effect if they tend towards the paler shades. Exactly the same applies to the jacket, shirt and trousers; it was most unusual to find a soldier whose cap, jacket and nether garments were all the same colour! The standard Army eagle and swastika cap badge, woven usually in pale blue on a tan brown cloth background, was sewn to the front of the crown of the cap, with the black/white/red national cockade below it. Africa was the only theatre where Panzer troops wore the inverted chevron of pink *waffenfarbe* on the front of the field-cap; this practice was in line with all other branches of the *Afrika Korps*. In theory, officers' field-caps were piped in silver-grey round the crown and in the front arch of the flap, but except for 'best dress' this was often ignored. The other main headgear worn in the desert was a lightweight side-cap; as regards colour, the above remarks about the field-cap also apply to the side-cap. Badges *waffenfarbe* chevrons and officers' piping were worn in exactly the same way as on the European issue caps.

The tunic-length four-pocket bush-jacket, sometimes tan and sometimes a faded dark green, was the usual dress for all ranks, but naturally was frequently discarded in favour of 'shirt-sleeve order'. The belt was brown leather, sometimes with a dull bronze circular buckle, fastening like a British Boy Scout belt. The breast eagle was of conventional Army pattern, usually in pale blue thread on a tan ground. The shoulder straps were identical to those worn on the European uniform; being 'slip-on' items, they could be fixed to any type of German military jacket or shirt. When the shirt was worn, shoulder straps were usually the only insignia applied to it. The conventional rank bars worn by all *Wehrmacht* officers on the collar of the field grey general service tunic were sewn to the upper lapels of the bush-jacket. On the lower lapels Panzer officers wore two small grey metal death's-heads pinned to the cloth; these were identical in size and design to those on the black Panzer collar patches of the European uniform. Assault badges, wound badges, and Iron Crosses were frequently worn pinned to the left breast of the bush-jacket on or below the pocket. The shirt was worn either buttoned or open-neck, with or without a scarf or sweat-rag. Both long trousers and shorts were worn, although the former seem to have been more usual; they were usually tucked into brown ankle-boots.

Round the right forearm of the bush-jacket the *Afrika Korps* cuff title was sometimes worn. There were two patterns, but as the second did not come into use until the late stages of the desert fighting both styles were worn indiscriminately right up to the end in Tunisia in the spring of 1943. The early pattern was a dark green band edged with silver, bearing the single word 'AFRIKAKORPS' in silver block capitals. The late pattern was a tan brown band edged with pale grey cord and bearing the word 'AFRIKA' in rather spidery pale grey capitals, between two grey palm-heads.

Sturmartillerie and Panzerjäger

The uniform of SP gun crews in Europe and Russia was identical



Drawings keyed to references in text

in cut to the black Panzer suit, but was made of field grey material. Self-propelled artillery was not administered as part of the tank arm, but as a branch of the conventional artillery. This was an awkward arrangement, and led to much inefficiency, frustration, and bitterness as the war progressed and the SP gun became a more and more important part of the German Army's equipment. It caused a major row at General Staff level when the famous Field Marshal Guderian was made Inspector of Armoured Troops; his political enemies managed to make use of inter-departmental jealousy to specifically exclude self-propelled artillery from his responsibilities.

The *Leutnant* in Fig B is wearing the standard SP gun uniform. His shoulder straps are piped in red, the artillery *waffenfarbe*, which also appears on his side-cap chevron and collar patches. These latter are the conventional Army officer's rank bars, worn on the upper lapels of the jacket. All badges and rank distinctions follow conventional Army practice, as described in Part 1 of this series. Some SP gun companies were attached permanently to Infantry or Panzer Grenadier Divisions as support troops; these crews would wear the normal grey suit with white or grass green *waffenfarbe* respectively, to indicate their parent unit.

The private illustrated in Fig C is wearing an attractive variation of the self-propelled artillery uniform. In 1944 special tank destroyer units (*Panzerjäger*) began to appear at the front; and these troops wore the grey SP gun uniform with pink Panzer *waffenfarbe* on shoulder straps and collar, and pink-edged black death's-head collar patches identical to those of tank crews. The shoulder straps bore the Gothic letter 'P'; this was woven in *waffenfarbe* for other ranks and junior NCOs, pressed in grey alloy for senior NCOs, and in yellow metal for officers. A figure finished in this way makes an attractive and realistic commander for the popular *Jagdpanther* conversion. It should be noted that by mid-1944, the field-cap had almost entirely replaced the side-cap as the normal headgear of armoured troops.

The SP guns of *Waffen-SS* units were crewed, as one would expect, by *SS* Artillery personnel. Red *waffenfarbe* distinguished the shoulder straps, which were basically black, and followed the rank sequence illustrated and described in Part 1 of this series. The normal *SS* rune and rank patches were worn on the collar of the grey cross-over jacket in silver and black; these followed the usual sequence, as illustrated and described in Part 2.

Figure conversions

These should follow the steps described in Part 1 of this series, up to painting stage, for SP gun crews of all types. It will add realism

and variety if SP gun commanders are sometimes modelled wearing steel helmets. They tended to have their heads in the fresh air rather more than tank crews, and to occupy static defence positions more often. As most modellers have discovered, usually the hard way, the only convincing German World War 2 steel helmets available to the converter are those worn by the crew figures in the Sd Kfz 234 armoured car kit. When modelling infantry, it can be a prohibitively expensive business to buy vast numbers of armoured car kits for the sake of two precious helmets; but for SP gun crews a couple of kits happily suffice. Needless to say, the heads should be removed and cemented in place on the new figures before the painting stage but after all major trimming operations are complete.

Afrika Korps figures are rather easier than European tank crews, as the distinctive cross-over jacket was not worn in a tropical version. The ever-faithful surrendering World War 1 German infantry figure can be the basis for many poses. Less pedantic modellers can amputate several of the figures from the Airfix *Afrika Korps* set; they have the advantage of realistic rolled shirt sleeves, but in our view their size and general finish leaves a good deal to be desired. The driver from the 88 mm gun and tractor kit is another good investment; he is moulded in hard, easily filed polystyrene and his field-cap does not require too much work to make it a respectable shape. Quite a

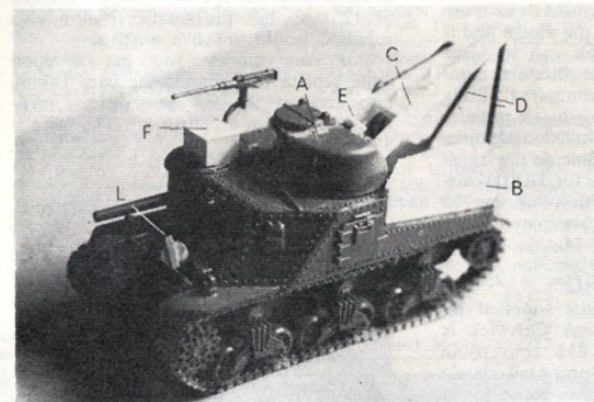
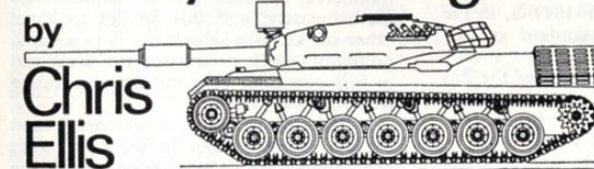
pleasing figure can be produced by slicing off this cap, *carefully*, and using it to replace the helmet of the officer in the armoured car kit. The latter's helmet should be cut off as low as possible over the binoculars and immediately under the rim at the back, in a single straight, sloping line. The top surface of the 'scalped' head and bottom surface of the cap should then be filed carefully until they can be cemented together at a realistic height and angle. The resulting *Afrika Korps* officer can be used either 'cupola length' or full-length. If the whole figure is to be visible, paint a double row of fawn 'laces' down the front of the brown boots from knee to instep. Jack-boots were not often worn in the desert, for obvious reasons, but a long lace-up canvas and leather boot was sometimes used.

Footnote

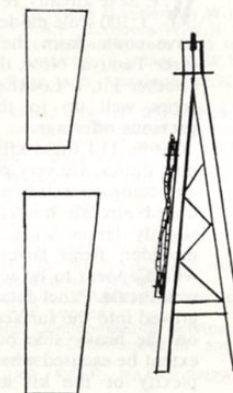
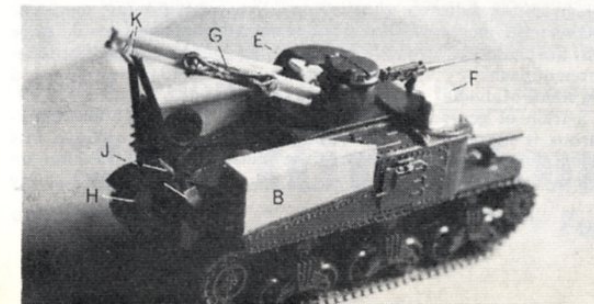
Since we went to press with Part 1 of this series, the Airfix RAF Emergency set has become available; and, as we had hoped, the figures in this kit will prove invaluable to the modeller of German tank crews. The RAF aircraftmen provide a much simpler medium for modelling the basic Panzer uniform than the conversions described in Part 1; in particular, the forage or side-cap so characteristic of the German tank crew uniform. By studying these figures in conjunction with the painting advice in these articles, modellers should be able to produce many attractive variations.

Military Modelling

by
Chris
Ellis



The T2 (later M31) was the standard US Army tank recovery vehicle (TRV). It was also used by the British as the Grant ARV Mk II. Conversion from the new Airfix M3 Medium kit is straightforward and the sequence of working is given in these pictures and instructions. Chassis and hull is made up following the kit instructions, but the 75 mm gun in this case is a 'dummy' and may be cemented rigid. Now read on. ..



Above: A T2 TRV assists a wrecked Sherman in the Siegfried Line, 1945. Note that the vehicle has one M4 bogie unit, plus extra rollers, not always fitted, between the jib stays. Left: Full-size drawings for jib and stowage box ideas. Inner face is the smaller one.

THE T2 TRV

Key to pictures, left: (A) Use Lee turret and mantlet, gun omitted, but with Grant turret hatch. Fill cupola locating slot. Cement in place traversed aft. (B) Add large stowage box each side from plastic card, using templates for sides, fitting on sloping edges of rear deck. (C) Make up jib from scrap plastic to follow plan. I used window frame edges left over from Airfix Service Station conversions. Remove uprights and cement edge to edge for perfect girder of correct pattern. Otherwise use Microstrip. (D) Make jib supports from Slater's plastic rod or cocktail sticks, each 26 mm long, legs 16 mm apart at base. Angle jib at 40 degrees. (E) Add roller and supports from scrap plastic just above mantlet opening 4 mm wide. (F) Add box above 75 mm gun position, 6 mm x 5 mm x 5 mm high, from plastic card. (G) Add blocks and tackle from thread and scrap; stowed on jib side. (H) Add 5 mm x 4 mm plates protecting exhausts (see prototype picture). (J) Add dummy locating lugs to foot of jib stays, also optional strip between feet to prevent loose gear slipping off back. (K) Add plates to head of jib (see prototype picture). (L) Large block (from scrap) stowed on glacis plate. Finally add spare road wheels on inner faces of stowage boxes and spare track shoes on rear faces. Also a towing hook on hull rear. Machine gun is an optional fitting, as is a stowage box across the nose, seen on my model, which can come from a T-34 kit. Some vehicles had a dummy 37 mm gun (from iron pipe) welded to turret 'front'. The winch purchase is from thread, led out over the roller from the mantlet slot, cemented over the jib end and given a hook on the end. A further option is a '30 machine gun on the turret (see heading picture). The actual turret could be traversed when necessary and the stays bolted to the glacis plate.

NEW KITS AND MODELS

GRIFION SPITFIRE

FROG have just released a 1:72 scale model of a Griffon-engined Spitfire F XIV with a VI flying bomb in the same kit. These are excellent models worthy of the highest praise and at last provides the modeller with one good alternative to the seemingly interminable Merlin-Spitfire kits.

The Spitfire model is extremely accurate and has 27 parts. Alternative cockpit canopies in either closed or open form, and open or retracted undercarriage parts are included.

Two sets of transfers, one for No 132 Sqn with SEAC in Hong Kong and the other for No 130 Punjab Squadron come with the kit. We found the model extremely accurate and first rate in detail but there is one minor omission. The F XIV had a retractable tailwheel and this detail seems to have been forgotten. The matter is a minor one though and two small pieces of plastic card will soon correct the fault. Finally, the VI model included has just four parts. The kit costs 4s 3d. *A.W.H.*

TWO IN ONE

ONE of the recent Monogram releases is a double offering of two AH-1G Hueycobras in the same kit. Modelled to 1:72 scale these are exceptionally good reproductions but one wonders why two identical models should be included in the same box.

The price of 24s is rather expensive for the same thing twice over and many modellers will doubtless share one kit! The only difference between the two comes in the markings on the decal sheet and even here the alternative offered is in the serial numbers.

Having made up one of the helicopters we found that, as usual with Monogram kits, the mouldings are of the very highest quality. Each model has 44 parts and can be made up in about two hours as the construction is very simple indeed. Cockpit detail including seats, controls, gun sight and pilot figures is first rate and leaves nothing to be desired. The canopy is also beautifully clear and the interior detail shows up well. The models are supplied with four rocket pods mounted on fuselage sponsons, and the main rotor but not the tail rotor can be made to rotate.

Our sample came from Modeltoys of Portsmouth who hold stocks. *A.W.H.*

NEW STOPPEL DECALS

THE Danish decal manufacturer Stoppel has started a series of Commonwealth markings beginning with the Royal Canadian Air Force (No 43). This is an exceptionally good sheet as it contains many

variations on the RCAF and CAF theme. Six basic variations in size are included but alternative maple leaves in both the stylised and earlier forms are given together with tail markings containing the Union Jack and the more recent maple leaf insignia.

The sheet costs 3s 6d and can be obtained from many of the leading model shops advertising in AIRFIX magazine. At this low price modellers can afford to get the sheet for stock. *A.W.H.*

AIRCRAFT FROM TAMIYA

WE have already reviewed several of the 1:100 scale modern aircraft kits which have come from the Japanese manufacturer Tamiya. Now, they have released yet another kit, a Lockheed F-104J/G, in the series well up to the standard of the previous offerings.

At 5s 11d these kits, in spite of the import duties, are very good value for money and compare well in price with British produced aircraft models of comparable or slightly larger scale. There are 37 parts moulded from silver plastic in the kit which appear to be accurate in spite of the small scale. Panel detail in most cases is engraved into the surface of the model and is on the heavy side but this can to some extent be excused when the price and complexity of the kit are compared. Long range tanks, Sidewinder air-to-air missiles and rocket pods are included and three alternative marking sets come on the transfer sheet. Two of these are for JASDF aircraft of either 205 Sqn, 6th Wing, or 720 Sqn, 7th Wing. The other alternative is for a Luftwaffe aircraft of JG 74. *A.W.H.*

1937 CORD

AMONG some new kits supplied by Messrs Jones Bros of Chiswick is the Sankyo 1937 Cord 812 convertible coupé, number one of a proposed classic car series. Sankyo is a new name to us in the model field. The 1:24 scale model the kit produces is a very well detailed car, typical of the period with its bulbous wings, very visual exhausts, and of course plenty of chrome.

A good feature of the design is the complete separation of body and chassis, each being constructed as individual units and held together finally by three self-tapping screws. Both of these units incorporate the salient features of the prototype, the parts being clean and free of flash.

The model is driven by a small Mabuchi motor operating through a train of gears to the back axle. The gearbox is supplied already assembled and when clipped into position retains the motor as well. The

batteries, not provided in the kit, two HP7s are mounted in a separate box behind the cockpit; in fact the whole power unit is in the boot.

Control, that is forward, stop and reverse, is by a small switch positioned just ahead of the righthand or offside seat this model being left hand drive. A small ratchet on the track rod sets the direction of travel, the front wheels pivoting on stub axles in the normal manner. Finally, a lifting bonnet reveals a detailed engine and twin horns, etc.

A certain amount of care is needed in assembling the kit, as the instructions have a slight Japanese flavour and are not too clear in places; nevertheless the numbered sketches are self-explanatory. Unfortunately, and this applies to some other car kits, the wheels are in two parts, no doubt to ease production problems and in this particular case did not produce a true running wheel.

Included in the kit is a very neat stand for the car when not in use; an elastic band slipped over the bumpers retains the model in position. The rather high ratio gearbox gives an approximate scale speed of 12 mph but the smaller pinion also supplied would improve on this.

For your money you get a good scale replica of a handsome car. Taking into account the few reservations mentioned this is an excellent kit. The price is 39s 11d. *B.L.*

LNER A4

WE were delighted to see the new Wills Finecast 4 mm scale cast metal kit of the LNER A4 streamlined pacific at the Model Railway Club Exhibition held in August. An illustration of the completed



model appears just above. The kit has been designed in such a way that it can be built to represent any of the original prototypes, ie, with side sheets or without, single or double chimney, etc. It can be fitted to the Tri-ang/Hornby A3 Flying Scotsman chassis which is correct for this model or there is a Finecast chassis available price 37s 6d plus 9s 2d Purchase Tax. The locomotive body kit is 110s plus 26s 11d Purchase Tax.

We have received a copy of a new booklet on building Finecast locomotive kits which gives much useful information on

Continued on page 138

AIRFIX magazine

MODELTOYS

PLASTIC KIT SPECIALISTS—ASSOCIATE MEMBER I.P.M.S.

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Contains markings for six alternative RAF BAC Lightnings.
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REFERENCES FOR THE MODELLER

The Mighty Eighth. A history of the U.S. 8th AF., with many photographs, colour section giving schemes for both bomber and fighter units, by Roger Freeman. Price: 75/-, Post 3/6.
Fighter Squadrons of the R.A.F. by John Rawlings. A companion volume for Philip Moyes' Bomber Sqns, detailing items such as bases and aircraft used, to names of C.O.s. £5, Post 4/6.

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FROG

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New Kits—continued

assembling and painting these models. Also received is the latest edition of Wills Finecast catalogue which illustrates and describes the complete range of 32 locomotive kits. The catalogue and booklet cost 2s 6d and 1s respectively. N.S.

LEOPARD TANK

LATEST in the Tamiya line of tank kits is a splendid 1:35 scale Leopard standardpanzer. This is right up to the standard we have come to expect from Tamiya, complete with the now usual rough cast finish to the hull and turret parts. Replete with detail, this model is motorised and has an optional position for the gears to give low or high speed running as desired—in fact the motor position is changed rather than the gears themselves. Assembly is perfectly straightforward, aided by the excellent illustrated instruction sheet. Gear train and battery switch/holder fitting come ready-assembled which should greatly assist younger modellers. A good selection of transfers is given—though the bridge plate is far too large—but no details of alternative markings. We finished our model as a vehicle of 1st Panzer Grenadier Division. The model is moulded in the correct West German dark olive drab which greatly aids paint mixing for this shade. Priced at 45s, this kit can be had from Jones Bros of Chiswick who supplied our sample. C.O.E.

MIGHTY M-60

ANYONE looking for something spectacular in the military model range might well consider the latest giant tank kit from Imai. This is for a US Army M-60 in 1:24 scale. It is quite a complex monster rather in the style of Tamiya's bigger tanks. The track shoes are individually assembled and the idler wheels can be adjusted to tension the track while the torsion bars are sprung. Big feature of this model, however, is the automatic gearbox which is gravity-operated as the nose of the tank lifts so that the gears automatically change down to take an incline. The precision finish of the gearbox is quite remarkable, and it is just as well that this comes ready-assembled! All the plastic parts are beautifully moulded with an excellent rough finish. However, what lets this kit down is the road wheels which are all noticeably too big for the M-60, although not everyone will worry about this. We had our sample on loan only and were not allowed to make it up. However, close examination of the parts and assembly method revealed no obvious snags. Jones Bros hold stocks of this big kit which costs 135s. C.O.E.

NEW SERIES

OF interest to most aircraft modellers will be news of an entirely new range of 'collectors item' kits which will be devoted to subjects not modelled elsewhere. Known as Rareplanes, each kit will be restricted to about 500 samples only (by the nature of the moulding process) and



Seversky P-35 is the first of the Rareplanes releases. This is the manufacturers' prototype.

construction will need a certain amount of experience in kit assembly. All essential parts of the airframe will be included, plus an acetate canopy, but parts like wheels, props, and so on must be furnished by the modeller from suitable spares. However, the instruction sheets gives necessary details and suggestions. First kit should be available by the time this issue appears and this will be for a Seversky P-35 to 1:72 scale. We have seen the made-up prototype and it looks very nice. However, at this stage we have not had a sample so we'll reserve any further comments until later. Price per kit will be 10s 6d (postage extra) which is not unreasonable for an enthusiasts' item of this nature. Rareplanes' address is 18 Hillford Place, Earlswood, Surrey. C.O.E.

TOMAHAWK KIT

IT had to come! . . . at last one of the leading manufacturers has produced a 1:72 scale replica of the well known P-40 Tomahawk, after the interminable succession of Kittyhawk and Mohawk kits which have been released over the years.

Selling at 3s, Frog have a winner in this new kit as it is bound to be popular judging by the reception given to its predecessors. We found the model to be delightfully accurate but with one or two minor faults mainly in the construction. The chief criticism comes in the joint between the wings and fuselage which is very weak and the model maker will have difficulty in getting the right amount of dihedral on the wings as a result. The other point (though this can hardly be described as a fault) concerns the undercarriage legs which are to scale size and therefore thin and spindly. The sample we were sent had both legs snapped in transit and needed some careful mending before being ready for assembly.

Two transfer alternatives are supplied, one for an AVG aircraft in Chinese Nationalist markings and the other for Caldwell's aircraft when serving with No 250 Sqn in the Western Desert. A.W.H.

TWIN KITS

FROG have now released some of their kits in twin packs to tie in with the *Battle of Britain* (and suitably packaged to this effect). The idea is similar to the Airfix Dogfight Doubles but a picture frame is included which holds the box lid and enables the completed models to be superimposed. While this is an admirable idea it falls a little flat since the aircraft featured, apart from the Spitfire and Blenheim, are not the correct variants for the Battle of

Britain period. The pairs involved are Hurricane IIC and Ju 87G, Spitfire 1A and Ju 88, and Blenheim I and Me 109F. First of these costs 9s 11d and the others cost 11s 9d. Transfers remain as for the individual kits. Our samples came from Jones Bros. C.O.E.

LATEST FROM LETRASET

EIGHT new Letraset rub-on transfer sets are now available. These include national insignia for the war-time Italian air force, both before and after 1942 (3 sheets), Luftwaffe code numbers and letters in red, USAF code letters and numbers 1941-45, USAF national insignia—pre-war and early war—and the first of a number of individual sets for particular aircraft. The latter are done in both 1:48 and 1:72 scales.

Unfortunately in the Italian sheets the manufacturer has so far omitted to produce either the multi-coloured fascies used for fuselage side decoration by the Regia Aeronautica or the green, white, yellow and red of the post-capitulation Axis air force though the wing insignia for both are included. No doubt the reason for this is that there would have to be many more printings on the same sheet. It is fair to assume that these markings will be available at a later date. In sheet M18, Squadriglia, Stormo and Gruppo markings are included, all very delicately printed, and also the tiny lettering favoured by the Italians in which the aircraft type was always painted on the aircraft's tail unit.

Three aircraft, P-47D *Amy Lou*, P-51D *Texas Terror IV*, and a P-38J of the 55th Fighter Squadron are on the 1:72 scale sheet of individual aircraft markings. The first two are also included on the 1:48 scale sheet. These make first rate transfers for popular aircraft models.

A large number of main model shops are now stocking Letraset transfers but they can also be obtained direct from Bryan Philpot, Brook Cottage, Bishops Green, Newbury, price 6s each. A.W.H.

RESCUE CHOPPER

ONE advantage of large scale models is the amount of detail that can be incorporated in such places as cockpits, engines and in the case of helicopters, the rotor heads. Hawk's 1:32 scale offering of a Kaman H-43B Huskie is no exception and for 32s there's a wealth of detail sufficient for any enthusiast.

This kit which came to us from Jones Bros of Chiswick has 86 parts moulded in silver plastic. The rotor heads are geared to rotate in opposite directions and could be easily adapted for a small electric motor. A good point too is the way that the main rotor blades are slightly drooped. Detailing in the cockpit is adequate and the rear glazed doors can be made to open and shut.

All of the kit parts fit well together and there is a notable absence of flash. We found a little difficulty in getting the fuselage halves to join due to the large amount of interior detail. We found this to be a first class kit. A.W.H.

AIRFIX magazine

photoPAGE

More rare pictures from readers with captions by Michael J. F. Bowyer. A free Airfix kit is awarded for every picture published, but please note that there is usually a delay of some months before publication due to the limited space at our disposal.

Key: (1) DH Rapides being assembled in Fiji in November 1940 for the RNZAF. Left is NZ556:6, right is NZ559:5. Note bomb racks under centre section of No 4 in the middle. NZ556, '559 with '555 and '557, plus DH Moth NZ522 formed No 4 GR Squadron. Aircraft are silver with black lettering. (2) Avro Aldershot J6944:8 of 99 Sqn, as described in this month's 'Bombing Colours', page 126 (J. G. Wood). (3) Another RNZAF Rapide, NZ526, pictured this time in 1945. (4) P-40E-1-CU Kittyhawks of No 15 Sqn, RNZAF at Whenuapai, 1942. NZ3037:JZ-P in foreground (1, 3, 4 by R. J. Lane). (5) Hoverfly I KK987:GJ-513 of 705 Sqn, FAA, based at Gosport lands aboard (probably) *Indomitable* or *Illustrious* in the early 'fifties. Silver overall, its wartime camouflage pattern still shows through (P. E. Fisher).



Avenger Markings—from page 112

White replaced the Sky Type 'S', and Lend-Lease Corsairs, etc., of the British Pacific and East Indies Fleets 1944-5 where Sea Blue Gloss (Midnight Blue) came into general use. However, most Barracudas and RN Avengers retained the green/grey/sky scheme, at least until late 1945.

Cockpit interiors on Avengers varied only slightly. Basically the floor and walls of the cockpits were medium green with the areas which would reflect sunlight painted over matt black. The wheel wells on wartime camouflaged TBF/Ms of the RN were usually either painted to match the undersides Sky or in a few cases bright yellowy-green Zinc Chromate. However with the introduction of Sea Blue Gloss paintwork, the wheel wells were seen to be painted

matt black on factory fresh machines. This was done so that any cracks caused through metal fatigue (brought on by the rather 'controlled crash' type of arrival of some naval aircraft during deck landings) would be more easily noticed during mechanical or pre-flight checks, etc. Wheel hubs also changed colour from dull metal or Sky to Sea Blue Gloss on later TBMs.

Some good pictures of Avengers in RN service are included in J. D. Brown's *Carrier Operations in World War 2* (Vol 1), published by Ian Allan. A selection of other colour schemes is given in the drawings and accompanying photographs, sufficient I hope to give modellers a good choice of alternative finishes and detail changes for Avengers.

Below, left: Modified TBM-3 of Royal Canadian Navy, as drawn on page 113. Note here the US type flat rear lower window. (B. Kopitzke) **Below, right:** TBM-3, 53678, French Navy, at Blagnac July 1964. Note radar pod below starboard wing and overall Sea Blue Gloss finish with black matt wheel wells. **Bottom, right:** Similar French post-war Avenger TBM-3 modified, ex USN 53127, of Aeronavale 55.17 flight, Algeria. Canopy is similar to that in the perspective drawing on page 113, but the frames differ slightly. (R. C. B. Ashworth via R. C. Jones). **Bottom, left:** RNZAF Avenger target tug, NZ2504, in later finish than that shown in the drawing. Note 'fern-leaf' roundels and plain rudder (R. J. Lane).



Letters to the Editor

Painting lesson

BEING out here in Germany with the RAF, there is a delay in my obtaining my monthly AIRFIX magazine, so having had a quick look at the new Releases and the aircraft conversions, I turned as usual to 'Letters to the Editor'.

Having snorted my way through Y. S. Hsu of Singapore complaining about 'unimaginative' He 177's, etc. (although an early mark of Meteor would be appreciated) I started to read 'Mottle Method' by Mr Olivier Aquilina of Malta, and this is the reason I have decided to put pen to paper. Poor Mr Aquilina must, I feel, be enlightened or I fear he shall spend the rest of his life getting stuck up to the eyebrows with green distemper and varnish. Varnish!!! May the Good Lord protect all Authentic Luftwaffe models. Shiny 109's, 190's, 110's and goodness knows what else.

Surely, Mr Aquilina, you must have discovered Humbrol Authentic Camouflage Colours by now. Their Luftwaffe Set was one of the first. That takes care of the colour and degree of 'shine' problem. The easiest part comes next, applying the paint.

Depending on the scale of the model, select an ordinary paint brush and cut the brush bristles off with a razor blade to a length of about 1/8 inch.

Then, starting with Helblau, paint all the undersurfaces and fuselage sides and the whole of the fin and rudder. Fuselage sides should be painted almost to the top of the fuselage. Now stir the Helgrau well, then using the cut down or 'stippling' brush, put some paint on the tin lid and then, ensuring not to use too much paint, stipple the Helgrau from the fuselage top down to the bottom, decreasing the stipple marks as you go. Now depending on the particular colour scheme for your model, you may or may not need to use dark green, foregoing on to the black-green. Both these colours are applied in the same manner as the Helgrau only starting further up the fuselage and ending further up the fuselage. I usually leave the fuselage top until last and then using an ordinary brush, paint this and the cockpit frames.

The finished result is as near as one can get to the actual aircraft without the use of a spray brush.

K. J. W. Marshall, BFPO 42.

Mirage details

AS AN ex-member of the RAAF, I was pleased to see the conversion notes and colour schemes of the Australian Mirage types in the July issue. I would like to correct some details and add further

Sketches illustrate Mr Bradmore's letter

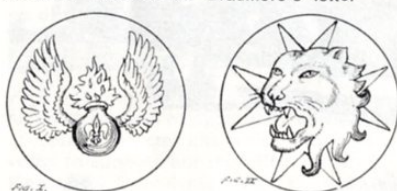


FIG. 1. NO. 3 Sqn. FIG. 2. NO. 76 Sqn. (INTERIOR VIEW OF COCKPIT) (EXTERNAL VIEW OF COCKPIT) (EXTERNAL VIEW OF COCKPIT) (EXTERNAL VIEW OF COCKPIT)

Letters to the Editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit of their choice. We are always pleased to receive your comments and pictures, which will be considered for publication. Submitted material and pictures can only be returned if accompanied by a stamped addressed envelope, and the Editor cannot accept responsibility for safe keeping of any such contributions, neither does he necessarily agree with comments expressed by correspondents in the letters columns. Please note that any letters anticipating a reply MUST be accompanied by a SAE or stamp.

information.

- On Mirage A3-74 the squadron badge is not the winged torch as stated, but is the winged 'flaming onion' grenade, commemorating the squadron's Army co-op duties in World War I. The wings and grenade are in medium blue, lined and shaded dark blue; flames are red and yellow and on the grenade is a gold Fleur-de-lis, awarded for service in France in the Great War. See Fig I.
- The fin insignia on Mirage A3-16 of 76 Sqn is said to include a brown panther-head. This is incorrect. The panther is always black except in the squadron crest on the nose which has not been described at all, and is as follows: A medium blue panther-head shaded and lined with dark blue and black, tongue in shades of pink, yellow and black eyes, black nose and white teeth superimposed on the white cross of St John, which is shaded to represent silver, but is never painted in silver. See Fig II.
- When Mirages first entered service with 75 Sqn, an entirely different unit fin insignia was in use, this was in the squadron colours of black and white. See Fig III. The fin flash at this time was vertical, not sloped. For positions of both markings see Fig IV.
- Fig V shows the most common shape and standard measurements of aircraft serial numbers used in the RAAF. Spacing is optical not mechanical.
- NATO symbols are used but must never exceed 4 inches outside dimension.
- Proportions of roundels are 1/2 diameter Oxford blue, 1/2 white, Kangaroo is signal red. All colours full gloss, but wind abrasion soon gives a matt appearance.

I hope this information is of use to aircraft enthusiasts.

C. W. Bradmore, Footscray, Victoria, Australia.



FIG. 1. NO. 3 Sqn. FIG. 2. NO. 76 Sqn. (INTERIOR VIEW OF COCKPIT) (EXTERNAL VIEW OF COCKPIT) (EXTERNAL VIEW OF COCKPIT) (EXTERNAL VIEW OF COCKPIT)

Marauder squadron

IN THE September issue I noticed a picture of a Marauder aircraft and the caption states that it is a SAAF aircraft of 21 Squadron.

During the war as a RAF Air Gunner I flew with a SAAF crew in 30 SAAF Squadron which was in 3 SAAF Wing all flying Marauders, the other squadrons being 12, 21, and 24 SAAF.

I have a feeling that the picture is a 30 Squadron aircraft which in the last months of the war introduced yellow tip markings.

The colour of most of the aircraft were olive green.

J. R. Brandish, Stratford-on-Avon, Warks.

Fire engine detail

HAVING recently returned from El Adem, where Airfix kits are extremely hard to obtain and once again returned to modelling with all the new kits available, it was natural to obtain and model the RAF Emergency Set.

Praise indeed for this set, but oh, from a Fireman's point of view, how much more could have been put into the 'Crash' truck.

Parts 50 and 51 should be reversed, the long 'Monitor' (part No 50) placed on to the pipeline (Part No 51) and this part placed on to the console.

Parts No 64, 65, 68 and 69 (the Firemen) were dressed in overalls, rubber boots, steel helmet (conventional services type) with an asbestos and Mica facepiece and asbestos gauntlets.

Usually only one Fireman was dressed in an asbestos suit, and what Nos 64 and 65 are supposed to be carrying, I have no idea for if these are meant to be CO₂ extinguishers, well they just don't look like them!

The driver, was of course, a tradesman from the Mechanical Transport flight and should be painted accordingly.

The Firemen's overalls were khaki green, boots (rubber) black, belt and pouch for 'crash' axe were black, whilst pouch for the 'Quick release knife' was light leather (as they remain to this day). Steel helmets were red.

The CO₂ bottles on the vehicle were and still are black with silver necks. (Parts Nos 54, 55, 56 and 57).

Top of cab and occasionally top of engine bonnet were yellow (airfield identification).

A Fireman 'Operator' stood between the Console (Parts Nos 45, 46, 47 and 48) and the rear engine (Parts Nos 40, 41, 42, 43 and 44) to operate the engine and console, he was also the Monitor operator.

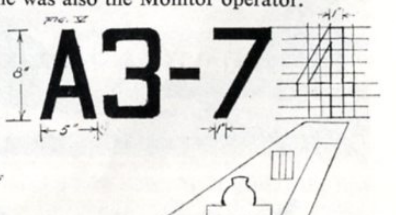


FIG. 1. NO. 3 Sqn. FIG. 2. NO. 76 Sqn. (INTERIOR VIEW OF COCKPIT) (EXTERNAL VIEW OF COCKPIT) (EXTERNAL VIEW OF COCKPIT) (EXTERNAL VIEW OF COCKPIT)

The chassis was usually black and the remainder of the vehicle red.

Now all that would appear to be quite a lot, but many modellers are like myself, wanting authenticity to a high degree and may be interested. Finally may I say, whilst I personally did not serve on or see this type of Crash truck, I and many others did use this chassis as a CO₂ truck, so how about a conversion kit?

Sgt. R. Kinder, RAF Fire Services, Oakington, Cambs.

Chaffee in 1:76

I HAVE discovered that the Roco Mini-tank Walker Bulldog, although appreciably too small to take its place in 1:76 scale collections, can be fairly easily converted into a quite passable M24 'Chaffee' in 1:76 scale.

Comparison with the plan in Bellona Prints No 5 shows that the suspension is about right but the tracks must be reversed to bring the driving sprockets to the front. The bogies will be fractionally small. The body is of the right dimensions but will have to be reworked for another hatch, ball gun, glacis, etc.

Although the turret could be extensively reworked it is advisable to scratch build this from laminated sheet, using the original cupola.

There is a Profile, No 6, of the Chaffee and, all in all, we have more at hand than usual to build a model not yet issued in kit form.

Similarly, the Minitank M42 twin 40 mm GMC can be converted to a near 1:76 scale M19, its predecessor, and the M37 and M41 can be made from either chassis. These are all featured in the Profile.

J. Burrows, Southall, Middx.

Useful tips

IF YOU use Metalskin (and have three hands?) a razor blade length piece of old Exacto saw, broken off with pliers, saves time in rivet-detailing the panels. Use it at right angles for curved surfaces and flats; use it flat for concave surfaces where it will bend to fit the surface. First try pressing your saw across the corner of a sheet of Metalskin as if to cut through it but not so strongly and see the result.

Strips of Metalskin also cover blemishes such as wing/fuselage joins, and save filling and sanding. Paint it over. The surface will not take the paint as well as plastic does, but two coats cover.

Do you find the plastic body putty has no body, and all the modelling character-



Above: One of our readers, David James, sent us this view of HMS Lagos, one of the '1942 Group' of 'Battle' class destroyers, as she appeared in 1945 in light grey with a dark blue panel on the hull side. Flotilla number '19' is red. She was one of the few 'Battle' class ships finished in wartime colour scheme as mentioned in Peter Hodges' article in our July issue.

istics of indifferent nougat? Before fine finishing the roughly hewn shape try soaking the surface in brush loads of liquid cement. The putty soaks up the liquid like a brick wall does paint, but be reasonable, do not apply so much that the model dissolves. The result with experiment will produce a working surface that you can work, but let it dry.

W. A. L. Vernon, Whitton, Middx.

Bolingbroke remains

THE beautiful Bolingbroke IVT on the Photopage of the August edition makes my specimen look rather forlorn. 9948 is



resting in a lonely spot in Manitoba, Canada, waiting for her new owner to come and take her away. My correspondent in Canada has knowledge of at least 8 of these aircraft. We also know of two Westland Lysanders and a Fairey Battle. I am trying to get examples of these aircraft back to England, with little success at the moment. My correspondent says that the aircraft can be swapped for light aircraft or sold outright. Any ideas anybody?

John Tiley, 1175 Ellis, C204, San Francisco, Calif 94109, USA
Anyone interested please contact Mr Tiley direct—EDITOR.

Transfer adhesive

READERS may be interested in how to make a simple transfer adhesive. There are two ways. (a) Put a small amount of liquid detergent in a cup of water. (b) If you have no liquid detergent put some detergent powder in a cup of hot water and leave to cool.

To use first put the transfers in warm water for about a minute and then in the

adhesive. Next put some of the adhesive on the area where the transfer is to be applied and then apply the transfers.

This will stop the transfers peeling.
C. Farrak, Hull, Yorks.

Cover picture

WITHOUT wishing to be unduly picknicky about such matters, I should like to draw attention to a number of incorrect items in the August issue cover picture. The fault lies in the long caption in stating 'pre-1914 style'. Regiments do all sorts of odd things with the remnants of full dress but to state this picture shows them as pre-1914 is wrong on the following points.

- (1) Helmets are officers' not other ranks, pattern.
- (2) Only one man is wearing his helmet properly.
- (3) The four drummers should have white leg aprons on their left legs.
- (4) They should have drummer's lace on their sleeves and across their backs.
- (5) There are some 'idle positions' in holding the drumsticks.
- (6) The drum major should have a red sash, gauntlets, drum major's cross-belt, and gold rank badges.

Henry Harris, Camberley, Surrey.

Very interesting points to raise, but in fact at no time did we state that the men were dressed in pre-1914 style. We merely referred to their cloth helmets as being pre-1914 style. Obviously the 1914 dress regulations do not apply today. As we understand it the Corps of Drums provide their present full dress from regimental and not official funds. How they dress is not our responsibility, however, and any comments of this nature should more properly be addressed to the Colonel of the regiment concerned.—EDITOR.

In our September issue we inadvertently gave an incorrect price for *The Observer's Fighting Vehicle Directory*. In fact, it costs 25s.

'Islander'—from page 125

STAGE 6 After the gloss white has been applied to the upper fuselage, the cockpit window framing can be painted in and the aerial array positioned, as can the two small vent ducts below the starboard flight deck porthole. The horseshoe and boomerang shaped arials are made from heated sprue, bent and sanded to shape. The pitot tube stand must be glued directly on to the upper cockpit transparency and this will necessitate a small excavation in the now putty-covered surface.

The method used to fit the two main wire arials is a matter for individual choice. Mine were made from a single strand taken from a length of plastic coated radio aerial wire. The ends were embedded in the wing roots, before the wings were positioned, and the wire passed through small 'hot needle' holes made in fuselage and fin. The wires were painted with well thinned gloss black and the insulators were depicted in thick gloss black. The large buffers on the beaching struts should be built up with putty and sanded to shape.

PAINTING & MARKINGS

To facilitate painting and marking, the model was completed in three separate sections, ie, the two wings and the fuselage. All fuselage markings were hand painted in enamels on a clear transfer sheet and after application, were painted over with clear gloss varnish. For the small signwriting a fine sable brush having only five or six hairs was used. The registration letters on the wings were taken from a Yeoman Transfer sheet of 1/2 inch letters. After application the letters were painted in, to achieve the required

thickness. The boomerang emblems on the fin should be applied before the fin is positioned and the arrow ends on the rudder can be hand painted direct. The cheat line along the sides of the fuselage was hand painted on white transfer sheet with Humbrol Green 37 and gloss black stripes. Lengths of Sellotape were used to facilitate straight line cutting in. Again, on application the strips were clear gloss varnished. Around the bow and stern sections, the cheat line was hand painted direct.

The semi-gloss grey used for the upper wing halves, engines, float struts and port side sign background was obtained by mixing four parts of Humbrol Grey 40 with one part Matt Blue 23 and one part matt white. The two areas of green on the fuselage are Humbrol Green 37, overpainted with clear flat varnish. Humbrol Flatting Agent could have been used here.

The gloss varnished bare metal appearance required for the remainder of the aircraft is another matter for individual ideas. Bear in mind that on the actual aircraft these areas do not appear as shiny and new as on a land-based aeroplane. I used four parts silver to one part gloss white, thoroughly mixed, even during application. When dry, the whole was overpainted with clear gloss varnish. The eight engine inspection hatches in the wing leading edges and the area around the port side cargo door were done in silver, overpainted with clear gloss. The engine exhaust pipes should be a flat, rusty brown colour.

On the actual aircraft, all upper horizontal surfaces, especially the wings and tailplanes, are permanently decorated with a streaky flat white pattern, by courtesy of the local seagulls. This should present quite a challenge to the sticklers for authenticity. It was not attempted on my model!



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- *T1/2. Armour 1/76. German. Afrika Korps Palms Various. SS Panzer Div Signs for the 5th, 1st, 2nd, 3rd, 22nd, divisions. 3/9

- T4. Armour 1/76. British. 8th Army Formation Signs, also 7th, 51st div signs, also Indian and Long Range Desert Group. 4/9
T5. Armour 1/76. German. Tank Numbers Various Types, Red and White also outline, plus small numbers for rear of Turrets. 3/9

- T6. Armour 1/76. British. Containing Formation signs post 1945, also W.W.II Sqd, signs, also bridging circles, 1st and 6th armoured signs. 4/9
T7. Armour 1/76. U.S.A. U.S. Army and Allied Stars in Yellow and White, plus Turret Stripping in Yellow. 3/9
*T8. Armour 1/76. U.S.A. Containing Block and Stencilled numbers in White and Yellow, "U.S. Army" "U.S. MARINES" National markings white also "U.S. AIR- FORCE" in Yellow Various sizes. 3/9

- T9. Armour 1/76. German. Panzer Division and Vehicle Classification markings for the 1st, 2nd, 3rd, 13th, 8th, 9th, 10th, 7th, 11th, 12th, 5th, 6th, 21st D.A. K. in white and yellow, also C in C Flag. 3/9
*T10. Armour 1/76. German. German Panzer Division Markings for 17th, 19th, 4th, 25th, 23rd, 24th, 14th, 16th, 18th, 21st, 22nd, 20th, 15th, also warning notices for "Achtung Minen" "Benzin" "Explosive" "Achtung" "Rauhen Verboten" plus National Flags. 4/9

- T11. Armour 1/76. German. SS Panzer division signs for 9th SS Hobenstaufen, 8th Florian Geyer, 1st LSSAH, 12th Hitler Jugend, 18th Horst Wessel, 10th Frundsberg, also the SS Panzer Division "Lehr". 3/9
T14. Armour 1/76. Russian. Stars, plain red also white and yellow outline, Division signs and Victory stars etc. 3/9

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- T15. Armour 1/76. British. Arms of Service for REME, RACS, RHA, Anti Tank Regiments, LAA Reg, RCS including head quarters, plus Bridging circles and requisite numbers. 4/9
T16. Armour 1/76. British. Arms of Service Signs for RECCE, RASC Units inc HQ, Armoured Car Regiment, Squadron markings in Red, Yellow, Blue, White, also Formation HQ in Black, Lorried Infantry Battalions in Green, Plus white numbers. 4/9
F1. American Civil War Flags. 20 mm. Confederate, various. 4/9
S1. Royal Navy Transatlantic Race Team, Phantom, Westland Wessex and Hawker Hunter. 4/9

BATTLE OF BRITAIN

Sheet No. C1 5/9
TWO SPITFIRES AND
ONE BLENHEIM 1F

Sheet No. C2 5/9
TWO HURRICANES AND
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Sheet No. C3 5/9
THREE Bf 109Es

Sheet No. C4 5/9
FOR MESSERSCHMITT
Bf 110 with Ju 87B



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War Emergency Destroyers—from page 117

to injury. To give them a measure of protection a splinter shield in the form of a solid bulwark was positioned on the deck edge around each 4.7 inch gun.

The bridge superstructure supported the DCT and HA Director, while spools extending outboard from it held look-out positions, torpedo sights and signal-searchlights.

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There were two galleys, the main unit forward at the break of the fo'c'sle and a secondary one aft in the superstructure beneath 'X' gun-deck. Each had an H-shaped 'Charlie Noble' funnel, and the forward galley funnel trunking was cranked in several directions. In ships with tripod masts it was led within the mast 'legs' and in those with lattice structures it was directed between the mast and the main

funnel.

The funnel itself had twin waste steam pipes leading up its forward surface and smaller steam pipes in the rear leading to the sirens. A grating was provided for the inspection and adjustment of the siren valves, which were operated remotely by cables attached to hand-levers on the bridge.

On the quarter-deck, two dan buoys were stowed to port and starboard. These were used as floating markers for various purposes, and each took the form of a timber spar about 18 ft long which passed through a cylindrical drum. In the water, they rode upright, something like a spar buoy. Attached to each was a necklace of six small floats. On later ships, it was common practice to stow the two dan buoys on the cat-walks above the torpedo tubes.

The port hand dan buoy drum was painted in red and white chequers, with red and white stripes on the spar, while the starboard hand buoy was similarly marked in green and white.

The foregoing, then, has been an outline description of the ships. Next month I shall deal in detail with modelling these vessels.

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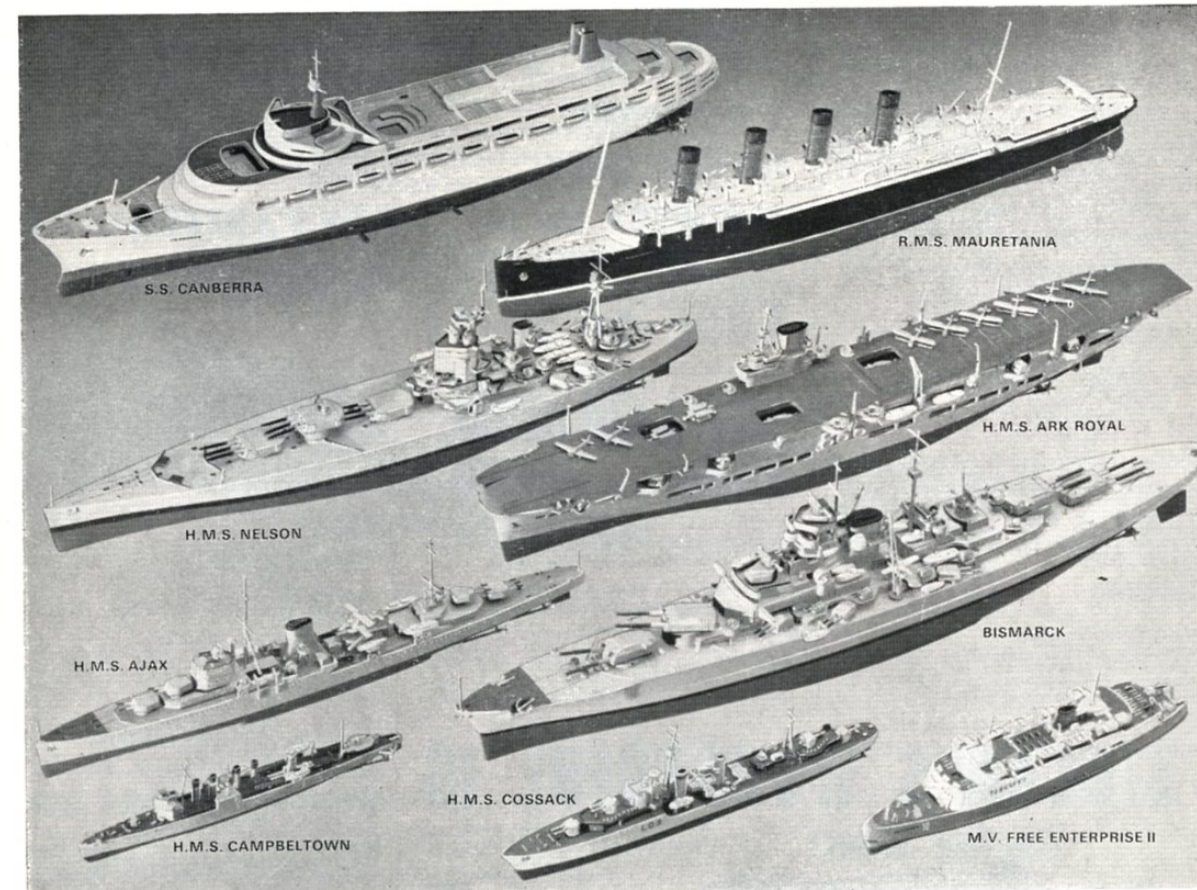
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